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ABSTRACT:

PROBLEM TO BE SOLVED: To provide an image forming device capable of inserting plural sheets in a special cover and binding them on the arbitrary right-hand or left-hand stitch.

SOLUTION: An image forming device comprises a copying machine 10 which reads in original images as data and can change the direction of the images outputted on the basis of the data, a stacker means 11b of holding plural sheets outputted from the copying machine 10 and stacked thereon, and a binder means 5 of inserting the plural sheets from the stacker means 11b in a special cover and binding them. The right-hand or left-hand stitch chosen in advance determines the direction of images outputted on the sheets.

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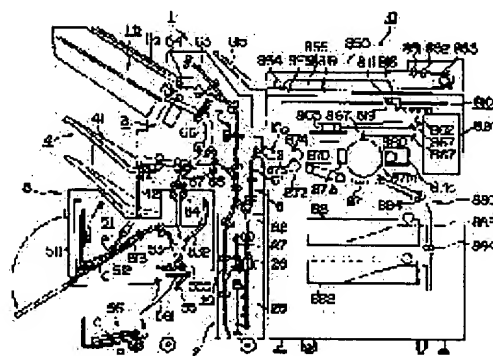
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(54) IMAGE FORMING DEVICE

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CLAIMS

[Claim(s)]

[Claim 1] An image data storage means by which an image outputted on a form was memorized as data, An image-processing means to change sense of an output of a up to [a form of an image which this image data storage means memorized], A form accumulation means to be formed in the conveyance path downstream of a form outputted from an imaging means which carries out imaging formation of said image data on a form, and this imaging means, and to accumulate two or more sheets of outputted forms, A covering hold means to hold two or more coverings with which adhesives of heat joining nature were applied inside a portion of the back, A covering feed means which takes out said one covering at a time from this covering hold means, A covering support means supported where said covering sent by this covering feed means is opened, In covering supported after this covering support means had opened, said two or more sheets of forms are conveyed from said form accumulation means. A heating means to warm a portion of the back of covering which two or more sheets of forms were conveyed, and was inserted by form conveyance insertion means to insert, and this form conveyance insertion means, to fuse adhesives of said heat joining nature, and to paste up said two or more sheets of forms and coverings, Image formation equipment with which sense which **** and is filed by said covering is characterized by changing sense of an image outputted on a form by right binding or left binding.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention is attached in a copying machine or a printer, bundles two or more sheets of forms copied or printed, and relates to image formation equipment equipped with the finisher who dedicates to exclusive covering automatically and does binding-head bookbinding.

[0002]

[Description of the Prior Art] In recent years, it files with a staple, and the finisher who packs the form after the output into a copying machine or a printer automatically, contains on the cover (covering) of dedication, and does binding-head bookbinding automatically is developed, and it is.

[0003] The paste of heat joining nature is applied to the portion to which exclusive covering used for such binding-head bookbinding hits the inside of covering, and the back. In the finisher, two or more forms by dedicating two or more forms to exclusive covering, and applying heat to the portion of the back are sized, and binding-head bookbinding is carried out.

[0004]

[Problem(s) to be Solved by the Invention] When bound, the document by which binding-head bookbinding was carried out has right binding which sizes and files the right-hand side of a document, and left binding which sizes and files the left-hand side of a document as shown in drawing 15 (b), as shown in drawing 15 (a). In many cases, right binding and the document of lateral writing are made into left binding for the document of columnar writing.

[0005] However, in the finisher attached in the copying machine, the printer, etc., the form conveyed from the copying machine, the printer, etc. will be inserted in covering of dedication as it is to the conveyance direction, and will be sized and filed in the portion of the back. Therefore, it filed and there were problems that the difference of the direction was unchangeable into arbitration, such as right binding and left binding. By, of course establishing a complicated switchback device and a form conversion path in a form conveyance path, it is with the time of right binding and left binding mechanically, and it is not impossible to change the sense of a form, and to insert and bind in exclusive covering. however, enlargement of the equipment which a mechanical configuration twists, and the problem of leading to a cost rise cut with this.

[0006] Then, the purpose of this invention is offering the image formation equipment which can perform right binding of a document, and left binding to arbitration in image formation equipment equipped with the finisher who does binding-head bookbinding of two or more forms using exclusive covering with which the adhesives of heat joining nature were beforehand applied to the portion of the back.

[0007]

[Means for Solving the Problem] This invention according to claim 1 for attaining the above-mentioned purpose An image data storage means by which an image outputted on a form was memorized as data, An image-processing means to change sense of an output of a up to [a form of an image which this image data storage means memorized], A form accumulation means to be formed in the conveyance

path downstream of a form outputted from an imaging means which carries out imaging formation of said image data on a form, and this imaging means, and to accumulate two or more sheets of outputted forms, A covering hold means to hold two or more coverings with which adhesives of heat joining nature were applied inside a portion of the back, A covering feed means which takes out said one covering at a time from this covering hold means, A covering support means supported where said covering sent by this covering feed means is opened, In covering supported after this covering support means had opened, said two or more sheets of forms are conveyed from said form accumulation means. A heating means to warm a portion of the back of covering which two or more sheets of forms were conveyed, and was inserted by form conveyance insertion means to insert, and this form conveyance insertion means, to fuse adhesives of said heat joining nature, and to paste up said two or more sheets of forms and coverings, Sense which **** and is filed by said covering is image formation equipment characterized by changing sense of an image outputted on a form by right binding or left binding.

[0008]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to the attached drawing.

One or less gestalt of operation, this invention is applied first, those fundamental actuation is explained to the configuration of the copying machine which attached the finisher who has a staple means, a binding-head means, etc. and this finisher's configuration, and a list, and, subsequently the image edit actuation by the copying machine which attached this finisher is explained.

[0009] Configuration>> of <<copying machine Drawing 1 is a schematic diagram for explaining the whole copying machine configuration which attached the finisher, and drawing 2 is the block diagram of a control system.

[0010] If a copying machine 10 is called the so-called digital copier and divided roughly, it is constituted by the scan system 810 which reads the manuscript to copy, the picture signal processing section 820 which processes the read image data, and the optical system 860 and the imaging system 870 for outputting the read image data on a form. Moreover, the manuscript to copy is conveyed in the upper part of this copying machine 10, the automatic manuscript transport device (ADF) 850 which reverses the front reverse side of a manuscript if needed is formed in it, and the control panel OP for ordering it a mode of operation, the number of copies, etc. of the various image edit processings performed with this copying machine 10 is formed in the upper surface of a copying machine 10.

[0011] And the finisher who equipped the binding-head means, the paper chip box means, the punch means, and the staple means is attached in this copying machine so that it may mention later.

[0012] The control system which controls actuation of such a whole (ADF and a finisher are included) copying machine is constituted by CPU950 for ADF which controls the objects CPU910 and ADF for copying machines which control a copying machine 10 to be shown in drawing 2 , and CPU980 for finishers which performs a finisher's control, and ROM911,951,981 which memorized the program respectively required for each CPU, and RAM912,952,982 used for various processings of each CPU are formed.

[0013] The picture signal processing section 820 is connected with the control panel OP, and actuation of each part of a copying machine is performed in CPU910 for copying machines by directions by this CPU910 for copying machines. Moreover, the CCD sensor 822 is connected to the picture signal processing section 820 through A/D converter 821, and the laser light source 862 of an imaging system is connected to it through D/A converter 831. Furthermore, the image memory 825 for memorizing the read image data is established in the picture signal processing section 820.

[0014] The function of each part of this copying machine 10 and actuation are further explained to details below. First, the manuscript set on the manuscript tray 815 of ADF850 is discharged by the paper output tray on ADF850, after one sheet is conveyed at a time to the position on the manuscript installation base (platen glass) 818 by directions of CPU950 for ADF and a manuscript is read by the scan system 810. Each manuscript conveyance system roller 851,852,853,854 and the conveyance belt 855 of ADF drive a manuscript, and it is conveyed.

[0015] Manuscript size is detected by ON / off time amount of the sensor SE 51 currently installed in

ADF850 at the time of conveyance of this manuscript. The signal from a sensor SE 51 is told to CPU910 for copying machines through CPU950 for ADF.

[0016] A scanner 819 drives by the scanning motor (un-illustrating), and moves in the bottom of platen glass 818, light is irradiated at the manuscript laid on platen glass 818 from the exposure lamp 811 attached in the scanner 819, CCD816 which is an optoelectric transducer receives the reflected light, and the scan system 10 performs scan reading of a manuscript image. The drive timing of the scanner 819 for this scan system 10 to scan the above-mentioned manuscript conveyance and the conveyed manuscript by CPU910 for copying machines is adjusted.

[0017] The signal in which photo electric conversion was carried out by CCD816 of the scan system 810 is changed into a digital signal by A/D converter 821 so that it can be dealt with as digital data, and it is inputted into the picture signal processing section 820. In the picture signal processing section 820, image quality amendment of a shading compensation, MTF amendment, a gamma correction, etc. is performed. The image data by which image quality amendment was carried out is memorized as code data in an image memory 825. And image edit of enlarging or contracting of an image, rotation, etc. is performed by the directions from CPU910 for copying machines based on the image data remembered to explain later.

[0018] It is classified into two or more memory areas, the code data which is compressed image data is memorized, and an image memory 825 is possible in the concurrency control of writing and read-out. And the memorized code data is managed on the managed table MT. In addition, management of image data is explained in the place of next image edit processing.

[0019] CPU910 for copying machines reads the code data memorized to the image memory 825 through the picture signal processing section 820, and enlarging or contracting of an image, rotation actuation of an image, etc. are performed with reference to an output directions table in the case of a printed output so that it may explain later.

[0020] Based on the output directions table explained later, the image data to which image-quality amendment, and an image processing and edit required for a list were performed in the picture signal processing section 820 is taken out from the picture signal processing section 820 by directions of CPU910 for a copy, is changed into analog data by D/A converter 831, drives the semiconductor laser 862 within optical system 860, and form top image formation of it is carried out by the development imprint system 871 of the imaging system 870 by this laser beam, and it is printed out.

[0021] In addition, optical system 60 is constituted by semiconductor laser 862, the polygon mirror 865 which deflects a laser beam, and the reflective mirror 867, and the imaging system 870 is constituted by the fixing system 873 which performs fixing of the development imprint system 871, the conveyance system 880 which conveys a form, and an image. Moreover, the development imprint system 871 is constituted by the imprint charger (un-illustrating) which makes a form imprint the toner image of photo conductor drum 871a, electrification charger 871b, development counter 871c that contains a developer and supplies a toner to a photo conductor drum, and photo conductor drum lifting, the separation charger (un-illustrating) which separates a form and a photo conductor drum, the cleaning plate (un-illustrating) from which an unnecessary toner is removed.

[0022] The conveyance system 880 is constituted by cassettes 881 and 882, the form guide 883, the timing roller 884, etc. which contained the form. Moreover, the paper size which dedicates beforehand the form contained by the form cassettes 881 and 882 for every form cassette is decided, and a paper size is judged for every cassette of the. In addition, although the number of form cassettes is two when illustrating, there may be much more form cassettes.

[0023] The fixing system 873 is constituted by the discharge sensor (un-illustrating) which detects discharge of the fixing roller 874 conveyed while carrying out thermocompression bonding of the form, the discharge roller 875, and a form.

[0024] The printed-out form is sent to the finisher 1 who mentions later from delivery unit 10b.

[0025] The control panel OP prepared in this copying machine 10 For example, as shown in drawing 3 Display lamp op4a, b which show the selection key op4 and condition for directing the gestalt which the print key op1 which directs copy initiation, the ten key op2 which inputs the number of copies, the

liquid crystal display touch panel op3 with which a display and various setup of a message are performed, and the copied form file, The chip box selection key op5 which directs how to fold a form, and the display lamp op5a, b, And from the processing selection key op6 which performs staple directions and punch directions, those display lamp op6a, b, etc. For example, when carrying out binding-head bookbinding, right binding or left binding is chosen by actuation of the selection key op4, and a setup in the fine mode etc. is further performed using the liquid crystal display touch panel op3. Moreover, at the time of binding-head bookbinding, when doubling and performing staple processing and punch processing, those directions are also performed by the processing selection key op6.

[0026] Control of this control panel OP is performed by CPU910 for copying machines, CPU910 for copying machines judges the input from each actuation key, and each processing is performed, and those processing state and various messages are outputted on the liquid crystal display panel op3. For example, in binding-head bookbinding, a binding-head means to mention later is operated to CPU980 for finishers, and it is made to make the preparations for binding a form in it.

[0027] The above is the fundamental function of a copying machine 10, and actuation.

[0028] <<finisher's outline configuration>> As shown in drawing 1, a finisher 1 Non sort tray 11a and form accumulation section 11b which accumulate and adjust generally the form P discharged from delivery unit 10b of a copying machine 10, The paper chip box means 2 which folds up the form P discharged from said delivery unit 10b 2 chip boxes and in the shape of Z character if needed (following Z boxes), A staple means 3 to perform staple processing to the form P which was installed in the form conveyance direction downstream, was accumulated, and was adjusted from form accumulation section 11b, The sort section 4 in which the form bunch after this staple processing is discharged and held, It consists of a binding-head means 5 to attach covering to a form bunch or the form bunch by which staple processing is not carried out after [said] staple processing was carried out, and a punch means 7 for it to be prepared into a form conveyance path and to perform punching in a form if needed. The form discharged from the copying machine 10 is conveyed by the form conveyance section 6 by each means in a finisher.

[0029] <<form conveyance section>> The conveyance way 61 which the form conveyance section 6 receives Form P from delivery unit 10b of a copying machine 10 first as shown in drawing 1, and is conveyed below, The switchback conveyance way 62 which reverses Form P order and the front reverse side, and the conveyance way 63 which conveys Form P to non sort tray 11a, The conveyance way 64 which branches from the conveyance way 63 and conveys Form P to form accumulation section 11b, The conveyance way 65 of said conveyance way 63 which branches from a leader mostly and conveys Form P to the binding-head means 5 or the sort section 4, It consists of conveyance ways 66 which convey the form bunch from said form accumulation section 11b to the sort section 4 or the binding-head means 5, and Form P is conveyed on central criteria in each [these] conveyance way.

[0030] if it furthermore explains in full detail, it is shown in drawing 4 -- as -- the conveyance way 61 -- a conveyance roller pair -- it has 611,612,613. the conveyance roller 621 which the switchback conveyance way 62 can rotate reversely [positive], the follower roller 622 which contacts this conveyance roller 621 and carries out follower rotation, and the conveyance roller pair which conveys the form P which switchbacked in the conveyance way 63, conveyance way 64, or conveyance way 65 direction -- it has 623,624 and the sensor SE 1 for form detection.

[0031] The form P conveyed caudad is first introduced in said conveyance way 61 on the switchback conveyance way 62. For example, if the back end of this form P is detected by the sensor SE 1 and predetermined time passes in not performing a paper chip box (i.e., if the form back end enters to the conveyance way 62), the conveyance roller 621 will switch to an inversion and will be conveyed upwards toward the conveyance way 63 from the switchback conveyance way 62.

[0032] this conveyance way 63 -- a conveyance roller pair -- punching will be performed by the punch means 7 if there are directions which 631,632,633,634 and discharge roller pair 635 are prepared, and form a punch hole in the point or the back end section of Form P.

[0033] the change pawl 641 for switching the conveyance place of Form P to said conveyance way 64, and a conveyance roller pair -- 642 and discharge roller pair 643 are prepared, and Form P is delivered

to non sort tray 11a or form accumulation section 11b.

[0034] the change pawl 651 for switching the conveyance place of Form P to said conveyance way 65, and a conveyance roller pair -- 652 is prepared and it leads to the direct binding-head means 5 or the sort section 4, without sending to the form accumulation section.

[0035] These change pawl 641,651 will be rotated by the solenoid which each is not illustrated, and the form P conveyed from said switchback conveyance way 62 will be guided to either of the conveyance ways 63 or 65 by the change pawl 651.

[0036] After staple processing is performed as occasion demands, the form P accumulated and adjusted by form accumulation section 11b is led to the sort section 4 through the conveyance way 66 which is a comparatively thick path, when paper is delivered as it is. On the other hand, when carrying out binding-head bookbinding, after staple processing is performed as occasion demands, it is led to the binding-head means 5 through the conveyance way 66.

[0037] the conveyance roller pair whose alienation to mutual was enabled on this conveyance way 66 -- the discharge roller 664 is formed at 661,662,663 and a tip.

[0038] <<sort section>> The sort section 4 has the sort tray 41 and the drive 42 which makes it go up and down this tray 41, as shown in drawing 4 . One sheet of form P is sent in at a time through the conveyance way 65 at the time of an extensive copy, or from form accumulation section 11b, it is sent to the staple means 3 and the form bunch by which staple processing was carried out is sent into this sort tray 41 through the conveyance way 66. In addition, the form P conveyed from the conveyance way 65 or the conveyance way 66 or a form bunch is guided to a tray 41 or the binding-head means 5 by the change pawl 665.

[0039] Whenever the form P held and loaded on the tray 41 is detected by the sensor SE 2, a tray 41 descends a constant rate every with a drive 42. If it is detected that the tray 41 descended even to the minimum by the sensor SE 3, at this time, the tray 41 will be full and future copy actuation will be interrupted. In addition, the configuration of the drive 42 to which a tray 41 is dropped a constant rate every is common knowledge, and explanation is omitted.

[0040] <<paper chip box means>> As shown in drawing 1 and drawing 4 , the paper chip box means 2 is established directly under the form conveyance section 6, and has the function which uses the image formation finishing form P as 2 chip boxes in the conveyance direction center section, the function which opens again the form P used as 2 chip boxes, and creases a center section, and the function which uses Form P as Z boxes.

[0041] What plays the central role of this paper chip box means 2 is the paper chip box rollers 21, 22, and 23 in which three right reverse is possible, and a backup roller 24, and, as for Form P, transfer is performed by two or more form conveyance ways 25-29 considering these rollers 21-24 as a center.

[0042] It paper-chip-box-***** and outlines. The paper chip box means 2 has two selectable paper chip box modes by actuation of the control panel OP of the main part 10 of a copying machine.

[0043] Z box Mohd -- the form P which this mode is the mode in which Form P is folded in the shape of Z character, and has been sent through the conveyance ways 61 and 62 from delivery unit 10b -- a switch back roller pair -- although the change member 251 is passed by conveyance by 621 and it is conveyed [it is alike and] in the direction of the 1st conveyance way 25, the stopped paper chip box roller 22 and a stopped backup roller 24 stop. And if the paper chip box roller 22 concerned drives, it will be conveyed until it contacts the stopper 252 set to the position. Since Form P will form a loop near the paper chip box rollers 21 and 22 when a stopper 252 is contacted, this loop is blown by the nip of the paper chip box rollers 21 and 22, and the 1st chip box is performed.

[0044] It is a Z box indication signal from a copying machine 10, the form P which the 1st chip box ended is conveyed by the transfer operation of the change member 271 on the 2nd conveyance way 27, and it is conveyed until it contacts a stopper 272. The form P stopped by this stopper 272 forms a loop near the nip of the chip box rollers 21 and 23, this loop folds it, it is bit by the nip of rollers 21 and 23, and the 2nd chip box is performed. the 2nd chip box is completed, the form P which broke Z and was carried out is conveyed on the 3rd conveyance way 28, and it conveys towards the switchback conveyance way 29 further -- having -- here -- a switch back roller pair -- it is conveyed by reversal of

291 towards the conveyance way 63.

[0045] 2 chip-box Mohd -- this Mohd is Mohd who folds and does Form P in the two center section. The 1st chip box is performed through the same process as the time of Z box Mohd by this Mohd only by the locations of the time of above-mentioned Z box Mohd's 1st chip box actuation and the 1st stopper 252 differing. Since the form P which the 1st chip box ended is not rotating so that the change member 271 prepared in the entrance of the 2nd conveyance way 27 may lead Form P to the 2nd conveyance way 27, it is directly conveyed towards the nip of the chip box rollers 21 and 23. that is, if Form P is blown to the nip of the paper chip box rollers 21 and 23 immediately after it escapes from the paper chip box rollers 21 and 22, after being conveyed as it is on the 3rd conveyance way 28, it will be conveyed on the switchback conveyance way 29 -- having -- here -- Z box o'clock -- the same -- a switch back roller pair -- it is conveyed by 291 towards the conveyance way 63. Therefore, a side with the fold of the form which folded two and was carried out becomes drawing Nakashita, a form edge turns up, and it is conveyed.

[0046] In addition, when carrying out binding-head bookbinding of the form used as Z boxes or 2 chip boxes in this way, it passes along the conveyance way 65 and is led to the direct binding-head means 5, and adjustment of a form edge is performed and it is bound there.

[0047] <<staple means>> As shown in drawing 4 and drawing 5, after the staple means 3 carries out alignment processing of the form P discharged from said conveyance way 64 in form accumulation section 11b, it gives a staple to the predetermined location of the form bunch concerned, and has ***** 31 which hammers out a staple needle, and the needle-guard section 32 bent in response to this hammered-out staple needle.

[0048] Tip stopper 12a catches and adjusts the tip (if it sees from the eject direction to a tray 12 back end) of the form P discharged on the tray 12, and said form accumulation section 11b carries out both-way migration in the direction in which the flank adjustment board 13 intersects perpendicularly to the conveyance direction, and adjusts the longitudinal direction of Form P. And while 1st chuck means 14a and 2nd chuck means 14b grasp the flank of Form P by turns, respectively and prevent the relief of Form P, 1st chuck means 14a grasps a form bunch, and sends out towards the staple means 3.

[0049] ***** 31 operates a needle cutting member and the needle bending member 312 through the cam link mechanism 316 which drives the staple needle of the needle cartridge 311 by the motor M1, towards the needle-guard section 32 side, carries out cutting separation of every one staple needle, and projects. Moreover, the needle-guard section 32 bends this staple needle in the shape of a KO typeface, and has the needle-guard member 321 which bands a form bunch together. However, since these belong to common knowledge, a detailed explanation is avoided (for example, refer to Japanese Patent Application No. No. 66143 [eight to]).

[0050] The placing location of the staple needle of the direction which intersects perpendicularly with the form conveyance direction h It enables it to move by the positive inversion of the spiral shaft 315 established in the direction which intersects perpendicularly with the form conveyance direction h with a stepping motor M2 while equipping two guide shafts 313,314 with ***** 31 free [a slide]. Moreover, two guide shafts 322,323 are equipped also with the needle-guard section 32 free [a slide], and it is performed by moving in the direction which intersects perpendicularly with the form conveyance direction h with the positive inversion of the spiral shaft 324 driven with a stepping motor M3.

[0051] Moreover, migration by said chuck means 14a determines the placing location of the staple needle of the form conveyance direction. Therefore, it is delivery of this 1st chuck means 14a, and either the tip of the accumulated form or thru/or the back end can perform staple processing with an amount. the edge (if it sees from the eject direction to a tray 12 tip) of the form which folded two in the case of binding, and was carried out -- a needle -- it extrudes until it comes to the location of the section 31 inside.

[0052] And after staple processing is carried out, it is put between said conveyance roller pair 661 alienation of was enabled mutually, and is conveyed by the conveyance way 66.

[0053] <<binding-head means>> The binding-head means 5 sizes the form after a copy using covering

marketed by making it a bunch. The covering hold section 51 in which this binding-head means 5 holds two or more commercial coverings for a binding head as shown in drawing 1 , drawing 4 , and drawing 5 , The covering conveyance section 52 which carries out drawing conveyance of the one covering C from the covering hold section 51, The form insertion section 53 held where the covering C conveyed from the covering conveyance section 52 is opened, It consists of the form conveyance section 54 which inserts the form bunch which has had the inside of said conveyance way 67 conveyed into Covering C, a heating unit 55 which heat-treats to the covering C with which Form P was inserted in the form insertion section 53, and the discharge section 56 which discharges the covering C after a binding head out of binding-head equipment, and holds it. the form bunch adjusted in form accumulation section 11b by this -- as it is -- or after staple processing is performed, pass the conveyance ways 66 and 67 -- pass the conveyance way 65 after being sent to the binding-head means 5, and carrying out binding-head processing or carrying out a paper chip box by the paper chip box means 2 -- one sheet is sent at a time to the binding-head means 5, and binding-head processing of two or more sheets of forms is carried out. [0054] Space for the covering hold section 51 to hold Covering C is held for covering by V typeface by the condition (condition shown in drawing 4) of having opened, with the open door closing 511, the covering attachment component 514, and the guide 512,513 under hold.

[0055] The pickup roller 521 which the covering conveyance section 52 contacts the reverse side cover side of the held covering C, and conveys the tip of Covering C, The roller pressure-welding member 522 which carries out the pressure welding of the pickup roller 521 concerned to Covering C, the SABAKI roller pair which conveys only one covering C -- 523 and a SABAKI roller pair -- with the SABAKI member 524, before having been arranged for the upstream of 523 the covering detection means 525 arranged on the lower stream of a river of SABAKI roller pair 523, and a SABAKI roller pair -- the covering conveyance roller pair arranged on the lower stream of a river of 523 -- it has the covering conveyance guide 527,528 constituted so that 526, and the covering hold section 51 and the form insertion section 53 might be inherited.

[0056] the guide plate 531,532,533,534 in which the form insertion section 53 forms inverse triangle-like form insertion space, and the covering resist roller pair arranged at the form insertion space lower part -- it is constituted by 535, the tip stopper 536 stationed in the covering conveyance direction upper part of form insertion space, and the horizontal adjustment member 537 arranged in said upper form insertion space of covering resist roller pair 535.

[0057] although the tip of the covering C conveyed from said covering conveyance section 52 contacts the tip stopper 536 toward the upper part along with a guide plate 512, Covering C is conveyed further -- having -- covering regions of back -- a lower part -- bending -- between guides 531,532 -- passing -- a covering resist roller pair -- a lower limit is regulated by 535.

[0058] passage of covering regions of back detects with the covering detection means 538 formed in the upper part concerned of covering resist roller pair 535 -- having -- fixed time amount (when the covering back end has covering regions of back in the covering conveyance roller pair 526 upstream in contact with covering resist roller pair 535 top) after, and a covering conveyance roller pair -- 526 -- an upper roller is evacuated out of a covering conveyance way at least.

[0059] By the chewiness, the covering back end engages with impression section 527a of the covering conveyance guide 527, and, as for the upper cover of Covering C, the back end location of Covering C is regulated by evacuation of the covering conveyance roller 526. Thereby, Covering C is set to the form insertion section 53 by the shape of V character by which regions of back were laid on covering resist roller pair 535, as a dashed line shows all over drawing.

[0060] After covering setting to the form insertion section 53, it is moved in the direction in which the horizontal adjustment member 537 intersects perpendicularly to the conveyance direction of covering, and a covering end face is pressed to the adjustment orientation plate (not shown) which countered with said horizontal adjustment member 537, and was formed, and a location is regulated.

[0061] the conveyance roller pair which conveys a form bunch at the form insertion section 53 on said conveyance way 67 where the distraction of the form conveyance section 54 was carried out to said upper part of resist roller pair 535 -- with 541 a detection means 543 to detect the form P in the

conveyance way 67 -- having -- a conveyance roller pair -- the form bunch conveyed by 541 carries out self-weight fall into the covering C in the condition of having been wide opened toward the upper part within the form insertion section 53. The edge which a form pastes up by this self-weight fall is prepared.

[0062] The hot plate 551 which heats the regions of back of the covering C with which the heating unit 55 was conveyed from the form insertion section 53, The heater 552 arranged at the lower part of a hot plate 551, and the reflecting plate 553 formed so that the perimeter of the lower part of the heater 552 concerned might be surrounded and the heat of a heater 52 might be centralized on a hot plate 551, It is constituted by the heat insulation member 555 and the temperature detection means 556 for the electric shielding attached in the heater support plate 554 which holds said hot plate 551, a heater 552, and a reflecting plate 553 in one, and the heater support plate 554 concerned.

[0063] if a form bunch is inserted into Covering C in the form insertion section 53 -- a covering conveyance roller pair -- 526 -- the edge of Covering C -- a pressure welding -- carrying out -- after that -- a covering resist roller pair -- at least one side of 535 evacuates out of form insertion space. and covering conveyance roller pair 523 is rotated at the same time it rotates the covering resist roller pair 535 concerned normally -- making -- Covering C and a form bunch -- the heating unit 55 of the lower part of the form insertion section 53 -- sending in -- a covering conveyance roller pair -- the drive of 526 and covering resist roller pair 535 -- stopping -- a covering conveyance roller pair -- the pressure welding of Covering C and the form bunch is carried out by covering resist roller pair 535 at the same time it estranges 526. The edge of the form bunch in Covering C will be further prepared by this actuation.

[0064] after adjustment actuation termination and a covering resist roller pair -- 535 melts the adhesives which fixed back [covering] by carrying out fixed time amount heating of the covering regions of back on a hot plate 551 at proper temperature, where the pressure welding of Covering C and the form bunch is carried out, and it pastes up Covering C and a form bunch. then, the time amount which Covering C and a form bunch paste up certainly -- choosing at one's own discretion -- a covering resist roller pair -- 535 is rotated normally and it discharges.

[0065] The discharge section 56 consists of a discharge guide 561, a closure plate 562, and a discharge tray 563, and the covering C conveyed from the heating unit 55 slides down the surface of the inclined discharge guide 561 in a self-weight, and is held in the discharge tray 563.

[0066] The above is a finisher's configuration.

[0067] <<image edit processing>> Binding-head actuation is explained hereafter.

[0068] Drawing 7 is the Maine flow chart of binding-head actuation. First, the 1st page is conveyed from the manuscript set to ADF850, and reading and the input of an image are performed (S1). The inputted image data is memorized in an image memory 825 (S2). And the managed table MT which manages arrangement of the image data in memory is created (S3). Actuation of S1-S3 is performed about all the manuscripts set to ADF850 above (S4).

[0069] Subsequently, the check of right binding or left binding is performed for directions from a control panel OP (S5). If right binding is chosen here, with the gestalt of this operation, 180-degree rotation of an image will be directed (S10), and it will move from the configuration of a conveyance path, or the configuration of a binding-head means to creation (S6) of an output directions table. On the other hand, if it is not right binding (left binding is chosen), it will move to creation (S6) of an output directions table as it is. In addition, about creation of an output managed table, it mentions later.

[0070] Subsequently, based on directions of the created output directions table, a printed output is carried out on a form (S7). The form by which the printed output was carried out is held in form accumulation section 11b mentioned above. And after checking whether the printed output of all the manuscripts has been carried out (S8), binding-head bookbinding is carried out by the binding-head means 5 mentioned above (S9).

[0071] The reason for performing such image edit is related to the reading direction of the image by the copying machine, and the form conveyance direction in the case of a printed output.

[0072] First, in the case of the gestalt of this operation, although it is the reading direction of an image,

as shown in drawing 8 , it is scanned in the main scanning direction and the direction of vertical scanning which a manuscript illustrates, and is read into them. Therefore, the portion the image data memorized in an image memory 825 is indicated to be at the reading starting point among drawing is memorized as a start address, and the portion shown as a reading end point is memorized in the last address. In addition, a main scanning direction is the image reading direction of CCD816, and the direction of vertical scanning is the migration direction of a scanner 819 here.

[0073] Thus, if the manuscript of one sheet is A4 size, as the read image data is shown in drawing 9 (a), the manuscript for one sheet is memorized by one of the fields divided into the plurality in an image memory 825. And the image data memorized to each field in this image memory 825 is managed on the managed table MT. Various kinds of information which needs the managed table MT for compression expanding processing of a compression method, a data length, etc. as the number and additional information of the number which shows the field in an image memory 825 as shown in drawing 9 (b), the manuscript No given to entry sequence, and the field connected is stored. Among drawing 9 (b), front connection shows whether connection when the inputted manuscript of one sheet is memorized ranging over two or more fields and the field of front are the first field, and "00" shows the first field and it shows a front field number except [its]. similarly, back connection shows whether connection and the field of the back are the last field, and shows the last field and the field number after coming out other than this and being connected by "FF." Here, since the manuscript image data of one sheet is settled by the manuscript of A4 size in one field, all front connection is set to "00", and all back connection becomes "FF".

[0074] Thus, in case the printed output of the memorized image data is carried out, the output directions table created in said step S6 is referred to.

[0075] First, in response to directions of 180-degree rotation of the image by the above-mentioned step S10, the output directions table in the case of right binding is put in order so that it may be outputted in order of the read manuscript and may be outputted sequentially from the field 01 where No1 which is the order of read of a manuscript was memorized, as shown in drawing 10 , and directions of 180-degree rotation are memorized as additional information for every field.

[0076] A printed output is performed based on this output directions table, and that output serves as an image which did a handstand in this drawing, as shown in drawing 11 . By this, with the gestalt of this operation, it will be outputted so that the edge on the right-hand side of a form may be equivalent to the portion of the back of covering, after the image on a form has stood erect. At this time, if the image data for a printed output is read from the last address and a printed output is carried out, it will serve as a printed output rotated 180 degrees.

[0077] In addition, among the illustrated output managed table, when there is no number of the field outputted before it when the number of front connection has two or more image fields outputted on one sheet of form, "00" is specified. Moreover, "FF" is specified when there is no number of the field outputted after it when the number of back connection has two or more image fields outputted on one sheet of form.

[0078] Next, as shown in drawing 12 , the output directions table on which in the case of left binding it is created since directions of image rotation etc. are not performed is only put in order so that it may be outputted sequentially from the field 01 where No1 which is the order of read of a manuscript was memorized. As shown in drawing 13 , the form printed by this will be outputted so that the edge on the left-hand side of a form may be equivalent to the portion of the back of covering, after the image stood erect in this drawing and the image on a form has stood erect.

[0079] Binding-head bookbinding of right binding as shown in drawing 14 (a) and (b) by the above, and left binding can be performed arbitrarily and easily.

[0080] In addition, although it is the gestalt which prepared the finisher in the copying machine with the gestalt of this operation explained above This invention is not limited to such a gestalt, and even if a finisher attaches it in the printer connected to the computer, it can be carried out similarly. In this case, binding-head bookbinding of right binding and left binding can be easily performed by changing the sense of the output image from a printer by whether it considers as right binding, or it considers as left

binding.

[0081]

[Effect of the Invention] It becomes possible to perform arbitrarily and easily binding-head bookbinding of right binding or left binding, without using a device which converts the conveyance direction of a form mechanically, since according to this invention explained above it is considered as the selected thing to which the sense of an image is changed into and a form top image outputs so that it might flip and might become the direction.

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TECHNICAL FIELD

[The technical field to which invention belongs] This invention is attached in a copying machine or a printer, bundles two or more sheets of forms copied or printed, and relates to image formation equipment equipped with the finisher who dedicates to exclusive covering automatically and does binding-head bookbinding.

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PRIOR ART

[Description of the Prior Art] In recent years, it files with a staple, and the finisher who packs the form after the output into a copying machine or a printer automatically, contains on the cover (covering) of dedication, and does binding-head bookbinding automatically is developed, and it is.

[0003] The paste of heat joining nature is applied to the portion to which exclusive covering used for such binding-head bookbinding hits the inside of covering, and the back. In the finisher, two or more forms by dedicating two or more forms to exclusive covering, and applying heat to the portion of the back are sized, and binding-head bookbinding is carried out.

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EFFECT OF THE INVENTION

[Effect of the Invention] It becomes possible to perform arbitrarily and easily binding-head bookbinding of right binding or left binding, without using a device which converts the conveyance direction of a form mechanically, since according to this invention explained above it is considered as the selected thing to which the sense of an image is changed into and a form top image outputs so that it might flip and might become the direction.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] When bound, the document by which binding-head bookbinding was carried out has right binding which sizes and files the right-hand side of a document, and left binding which sizes and files the left-hand side of a document as shown in drawing 15 (b), as shown in drawing 15 (a). In many cases, right binding and the document of lateral writing are made into left binding for the document of columnar writing.

[0005] However, in the finisher attached in the copying machine, the printer, etc., the form conveyed from the copying machine, the printer, etc. will be inserted in covering of dedication as it is to the conveyance direction, and will be sized and filed in the portion of the back. Therefore, it filed and there were problems that the difference of the direction was unchangeable into arbitration, such as right binding and left binding. By, of course establishing a complicated switchback device and a form conversion path in a form conveyance path, it is with the time of right binding and left binding mechanically, and it is not impossible to change the sense of a form, and to insert and bind in exclusive covering. however, enlargement of the equipment which a mechanical configuration twists, and the problem of leading to a cost rise cut with this.

[0006] Then, the purpose of this invention is offering the image formation equipment which can perform right binding of a document, and left binding to arbitration in image formation equipment equipped with the finisher who does binding-head bookbinding of two or more forms using exclusive covering with which the adhesives of heat joining nature were beforehand applied to the portion of the back.

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MEANS

[Means for Solving the Problem] This invention according to claim 1 for attaining the above-mentioned purpose An image data storage means by which an image outputted on a form was memorized as data, An image-processing means to change sense of an output of a up to [a form of an image which this image data storage means memorized], A form accumulation means to be formed in the conveyance path downstream of a form outputted from an imaging means which carries out imaging formation of said image data on a form, and this imaging means, and to accumulate two or more sheets of outputted forms, A covering hold means to hold two or more coverings with which adhesives of heat joining nature were applied inside a portion of the back, A covering feed means which takes out said one covering at a time from this covering hold means, A covering support means supported where said covering sent by this covering feed means is opened, In covering supported after this covering support means had opened, said two or more sheets of forms are conveyed from said form accumulation means. A heating means to warm a portion of the back of covering which two or more sheets of forms were conveyed, and was inserted by form conveyance insertion means to insert, and this form conveyance insertion means, to fuse adhesives of said heat joining nature, and to paste up said two or more sheets of forms and coverings, Sense which **** and is filed by said covering is image formation equipment characterized by changing sense of an image outputted on a form by right binding or left binding.

[0008]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to the attached drawing.

One or less gestalt of operation, this invention is applied first, those fundamental actuation is explained to the configuration of the copying machine which attached the finisher who has a staple means, a binding-head means, etc. and this finisher's configuration, and a list, and, subsequently the image edit actuation by the copying machine which attached this finisher is explained.

[0009] Configuration>> of <<copying machine Drawing 1 is a schematic diagram for explaining the whole copying machine configuration which attached the finisher, and drawing 2 is the block diagram of a control system.

[0010] If a copying machine 10 is called the so-called digital copier and divided roughly, it is constituted by the scan system 810 which reads the manuscript to copy, the picture signal processing section 820 which processes the read image data, and the optical system 860 and the imaging system 870 for outputting the read image data on a form. Moreover, the manuscript to copy is conveyed in the upper part of this copying machine 10, the automatic manuscript transport device (ADF) 850 which reverses the front reverse side of a manuscript if needed is formed in it, and the control panel OP for ordering it a mode of operation, the number of copies, etc. of the various image edit processings performed with this copying machine 10 is formed in the upper surface of a copying machine 10.

[0011] And the finisher who equipped the binding-head means, the paper chip box means, the punch means, and the staple means is attached in this copying machine so that it may mention later.

[0012] The control system which controls actuation of such a whole (ADF and a finisher are included) copying machine is constituted by CPU950 for ADF which controls the objects CPU910 and ADF for

copying machines which control a copying machine 10 to be shown in drawing 2 , and CPU980 for finishers which performs a finisher's control, and ROM911,951,981 which memorized the program respectively required for each CPU, and RAM912,952,982 used for various processings of each CPU are formed.

[0013] The picture signal processing section 820 is connected with the control panel OP, and actuation of each part of a copying machine is performed in CPU910 for copying machines by directions, by this CPU910 for copying machines. Moreover, the CCD sensor 822 is connected to the picture signal processing section 820 through A/D converter 821, and the laser light source 862 of an imaging system is connected to it through D/A converter 831. Furthermore, the image memory 825 for memorizing the read image data is established in the picture signal processing section 820.

[0014] The function of each part of this copying machine 10 and actuation are further explained to details below. First, the manuscript set on the manuscript tray 815 of ADF850 is discharged by the paper output tray on ADF850, after one sheet is conveyed at a time to the position on the manuscript installation base (platen glass) 818 by directions of CPU950 for ADF and a manuscript is read by the scan system 810. Each manuscript conveyance system roller 851,852,853,854 and the conveyance belt 855 of ADF drive a manuscript, and it is conveyed.

[0015] Manuscript size is detected by ON / off time amount of the sensor SE 51 currently installed in ADF850 at the time of conveyance of this manuscript. The signal from a sensor SE 51 is told to CPU910 for copying machines through CPU950 for ADF.

[0016] A scanner 819 drives by the scanning motor (un-illustrating), and moves in the bottom of platen glass 818, light is irradiated at the manuscript laid on platen glass 818 from the exposure lamp 811 attached in the scanner 819, CCD816 which is an optoelectric transducer receives the reflected light, and the scan system 10 performs scan reading of a manuscript image. The drive timing of the scanner 819 for this scan system 10 to scan the above-mentioned manuscript conveyance and the conveyed manuscript by CPU910 for copying machines is adjusted.

[0017] The signal in which photo electric conversion was carried out by CCD816 of the scan system 810 is changed into a digital signal by A/D converter 821 so that it can be dealt with as digital data, and it is inputted into the picture signal processing section 820. In the picture signal processing section 820, image quality amendment of a shading compensation, MTF amendment, a gamma correction, etc. is performed. The image data by which image quality amendment was carried out is memorized as code data in an image memory 825. And image edit of enlarging or contracting of an image, rotation, etc. is performed by the directions from CPU910 for copying machines based on the image data remembered to explain later.

[0018] It is classified into two or more memory areas, the code data which is compressed image data is memorized, and an image memory 825 is possible in the concurrency control of writing and read-out. And the memorized code data is managed on the managed table MT. In addition, management of image data is explained in the place of next image edit processing.

[0019] CPU910 for copying machines reads the code data memorized to the image memory 825 through the picture signal processing section 820, and enlarging or contracting of an image, rotation actuation of an image, etc. are performed with reference to an output directions table in the case of a printed output so that it may explain later.

[0020] Based on the output directions table explained later, the image data to which image-quality amendment, and an image processing and edit required for a list were performed in the picture signal processing section 820 is taken out from the picture signal processing section 820 by directions of CPU910 for a copy, is changed into analog data by D/A converter 831, drives the semiconductor laser 862 within optical system 860, and form top image formation of it is carried out by the development imprint system 871 of the imaging system 870 by this laser beam, and it is printed out.

[0021] In addition, optical system 60 is constituted by semiconductor laser 862, the polygon mirror 865 which deflects a laser beam, and the reflective mirror 867, and the imaging system 870 is constituted by the fixing system 873 which performs fixing of the development imprint system 871, the conveyance system 880 which conveys a form, and an image. Moreover, the development imprint system 871 is

constituted by the imprint charger (un-illustrating) which makes a form imprint the toner image of photo conductor drum 871a, electrification charger 871b, development counter 871c that contains a developer and supplies a toner to a photo conductor drum, and photo conductor drum lifting, the separation charger (un-illustrating) which separates a form and a photo conductor drum, the cleaning plate (un-illustrating) from which an unnecessary toner is removed.

[0022] The conveyance system 880 is constituted by cassettes 881 and 882, the form guide 883, the timing roller 884, etc. which contained the form. Moreover, the paper size which dedicates beforehand the form contained by the form cassettes 881 and 882 for every form cassette is decided, and a paper size is judged for every cassette of the. In addition, although the number of form cassettes is two when illustrating, there may be much more form cassettes.

[0023] The fixing system 873 is constituted by the discharge sensor (un-illustrating) which detects discharge of the fixing roller 874 conveyed while carrying out thermocompression bonding of the form, the discharge roller 875, and a form.

[0024] The printed-out form is sent to the finisher 1 who mentions later from delivery unit 10b.

[0025] The control panel OP prepared in this copying machine 10 For example, as shown in drawing 3 Display lamp op4a, b which show the selection key op4 and condition for directing the gestalt which the print key op1 which directs copy initiation, the ten key op2 which inputs the number of copies, the liquid crystal display touch panel op3 with which a display and various setup of a message are performed, and the copied form file, The chip box selection key op5 which directs how to fold a form, and the display lamp op5a, b, And from the processing selection key op6 which performs staple directions and punch directions, those display lamp op6a, b, etc. For example, when carrying out binding-head bookbinding, right binding or left binding is chosen by actuation of the selection key op4, and fine Mohd's setup etc. is further performed using the liquid crystal display touch panel op3, Moreover, at the time of binding-head bookbinding, when doubling and performing staple processing and punch processing, those directions are also performed by the processing selection key op6.

[0026] Control of this control panel OP is performed by CPU910 for copying machines, CPU910 for copying machines judges the input from each actuation key, and each processing is performed, and those processing state and various messages are outputted on the liquid crystal display panel op3. For example, in binding-head bookbinding, a binding-head means to mention later is operated to CPU980 for finishers, and it is made to make the preparations for binding a form in it.

[0027] The above is the fundamental function of a copying machine 10, and actuation.

[0028] <<finisher's outline configuration>> As shown in drawing 1 , a finisher 1 Non sort tray 11a and form accumulation section 11b which accumulate and adjust generally the form P discharged from delivery unit 10b of a copying machine 10, The paper chip box means 2 which folds up the form P discharged from said delivery unit 10b 2 chip boxes and in the shape of Z character if needed (following Z boxes), A staple means 3 to perform staple processing to the form P which was installed in the form conveyance direction downstream, was accumulated, and was adjusted from form accumulation section 11b, The sort section 4 in which the form bunch after this staple processing is discharged and held, It consists of a binding-head means 5 to attach covering to a form bunch or the form bunch by which staple processing is not carried out after [said] staple processing was carried out, and a punch means 7 for it to be prepared into a form conveyance path and to perform punching in a form if needed. The form discharged from the copying machine 10 is conveyed by the form conveyance section 6 by each means in a finisher.

[0029] <<form conveyance section>> The conveyance way 61 which the form conveyance section 6 receives Form P from delivery unit 10b of a copying machine 10 first as shown in drawing 1 , and is conveyed below, The switchback conveyance way 62 which reverses Form P order and the front reverse side, and the conveyance way 63 which conveys Form P to non sort tray 11a, The conveyance way 64 which branches from the conveyance way 63 and conveys Form P to form accumulation section 11b, The conveyance way 65 of said conveyance way 63 which branches from a leader mostly and conveys Form P to the binding-head means 5 or the sort section 4, It consists of conveyance ways 66 which convey the form bunch from said form accumulation section 11b to the sort section 4 or the binding-

head means 5, and Form P is conveyed on central criteria in each [these] conveyance way.

[0030] if it furthermore explains in full detail, it is shown in drawing 4 -- as -- the conveyance way 61 -- a conveyance roller pair -- it has 611,612,613. the conveyance roller 621 which the switchback conveyance way 62 can rotate reversely [positive], the follower roller 622 which contacts this conveyance roller 621 and carries out follower rotation, and the conveyance roller pair which conveys the form P which switchbacked in the conveyance way 63, conveyance way 64, or conveyance way 65 direction -- it has 623,624 and the sensor SE 1 for form detection.

[0031] The form P conveyed caudad is first introduced in said conveyance way 61 on the switchback conveyance way 62. For example, if the back end of this form P is detected by the sensor SE 1 and predetermined time passes in not performing a paper chip box (i.e., if the form back end enters to the conveyance way 62), the conveyance roller 621 will switch to an inversion and will be conveyed upwards toward the conveyance way 63 from the switchback conveyance way 62.

[0032] this conveyance way 63 -- a conveyance roller pair -- punching will be performed by the punch means 7 if there are directions which 631,632,633,634 and discharge roller pair 635 are prepared, and form a punch hole in the point or the back end section of Form P.

[0033] the change pawl 641 for switching the conveyance place of Form P to said conveyance way 64, and a conveyance roller pair -- 642 and discharge roller pair 643 are prepared, and Form P is delivered to non sort tray 11a or form accumulation section 11b.

[0034] the change pawl 651 for switching the conveyance place of Form P to said conveyance way 65, and a conveyance roller pair -- 652 is prepared and it leads to the direct binding-head means 5 or the sort section 4, without sending to the form accumulation section.

[0035] These change pawl 641,651 will be rotated by the solenoid which each is not illustrated, and the form P conveyed from said switchback conveyance way 62 will be guided to either of the conveyance ways 63 or 65 by the change pawl 651.

[0036] After staple processing is performed as occasion demands, the form P accumulated and adjusted by form accumulation section 11b is led to the sort section 4 through the conveyance way 66 which is a comparatively thick path, when paper is delivered as it is. On the other hand, when carrying out binding-head bookbinding, after staple processing is performed as occasion demands, it is led to the binding-head means 5 through the conveyance way 66.

[0037] the conveyance roller pair whose alienation to mutual was enabled on this conveyance way 66 -- the discharge roller 664 is formed at 661,662,663 and a tip.

[0038] <<sort section>> The sort section 4 has the sort tray 41 and the drive 42 which makes it go up and down this tray 41, as shown in drawing 4 . One sheet of form P is sent in at a time through the conveyance way 65 at the time of an extensive copy, or from form accumulation section 11b, it is sent to the staple means 3 and the form bunch by which staple processing was carried out is sent into this sort tray 41 through the conveyance way 66. In addition, the form P conveyed from the conveyance way 65 or the conveyance way 66 or a form bunch is guided to a tray 41 or the binding-head means 5 by the change pawl 665.

[0039] Whenever the form P held and loaded on the tray 41 is detected by the sensor SE 2, a tray 41 descends a constant rate every with a drive 42. If it is detected that the tray 41 descended even to the minimum by the sensor SE 3, at this time, the tray 41 will be full and future copy actuation will be interrupted. In addition, the configuration of the drive 42 to which a tray 41 is dropped a constant rate every is common knowledge, and explanation is omitted.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the drawing in which the outline configuration of a copying machine and a finisher which applied this invention is shown.

[Drawing 2] It is a block diagram for explaining the control system of the above-mentioned copying machine and a finisher.

[Drawing 3] It is the drawing in which an example of the control panel prepared in the above-mentioned copying machine is shown.

[Drawing 4] It is the drawing in which the above-mentioned finisher's configuration is shown.

[Drawing 5] It is the drawing in which the configuration of the staple means prepared for the above-mentioned finisher is shown.

[Drawing 6] It is the drawing in which the configuration of the binding-head means prepared for the above-mentioned finisher is shown.

[Drawing 7] It is the flow chart which shows the procedure of the image processing at the time of the binding-head copy in the above-mentioned copying machine.

[Drawing 8] It is a drawing for explaining manuscript reading which can set the above-mentioned copying machine.

[Drawing 9] It is a drawing for explaining the managed table which performs memory arrangement and its management of the read image data in the above-mentioned copying machine.

[Drawing 10] It is a drawing for explaining the output directions table at the time of right binding.

[Drawing 11] It is a drawing for explaining the form output at the time of right binding.

[Drawing 12] It is a drawing for explaining the output directions table at the time of left binding.

[Drawing 13] It is a drawing for explaining the form output at the time of left binding.

[Drawing 14] It is a drawing for explaining right binding of the document by which binding-head bookbinding was carried out, and left binding.

[Description of Notations]

- 1 -- Finisher,
- 2 -- Paper chip box means,
- 5 -- Binding-head means,
- 10 -- Copying machine,
- 51 -- Covering hold section,
- 52 -- Covering conveyance section,
- 54 -- Form conveyance section,
- 55 -- Heating unit,
- 820 -- Picture signal processing section,
- 825 -- Image memory
- 910 -- CPU for copying machines,
- 980 -- CPU for finishers.

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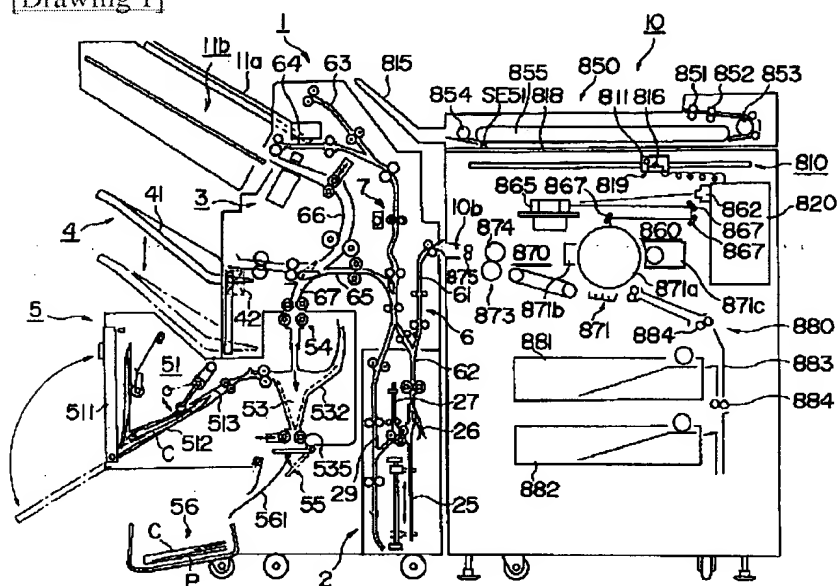
1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. **** shows the word which can not be translated.

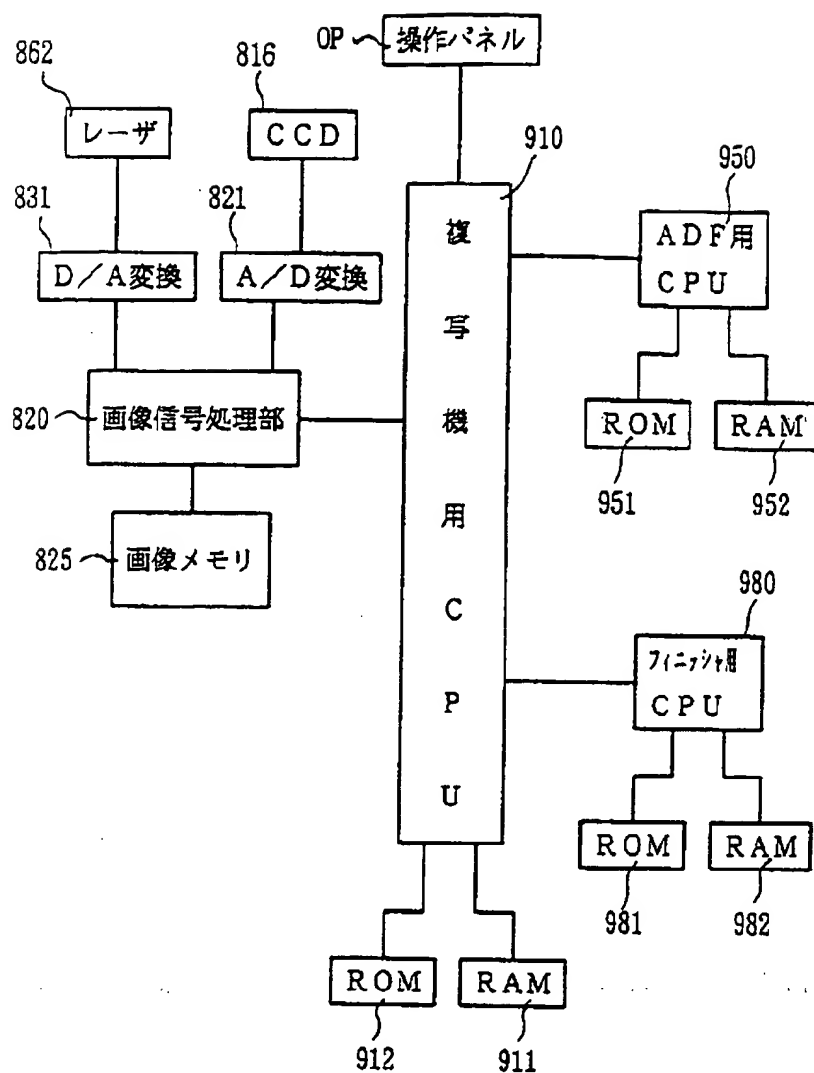
3. In the drawings, any words are not translated.

DRAWINGS

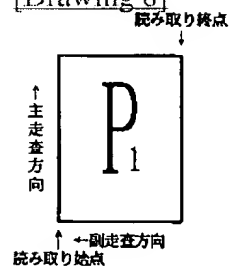
[Drawing 1]



[Drawing 2]



[Drawing 8]



[Drawing 9]

(a)

(メモリ容量)

	領域	圧縮された符号データ
0	01	1枚目の符号データ
32K	02	2枚目の符号データ
64K	03	3枚目の符号データ
96K	04	4枚目の符号データ
128K	.	
	.	
	.	

(b)

管理テーブルMT

領域	No	前連結	後連結	付加情報
01	1	00	FF	
02	2	00	FF	
03	3	00	FF	
04	4	00	FF	
.				
.				
.				

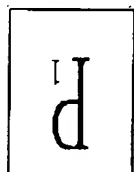
[Drawing 10]

出力指示テーブル (右縦じ)

領域	No	前連結	後連結	付加情報
01	1	00	FF	180°回転
02	2	00	FF	180°回転
03	3	00	FF	180°回転
04	4	00	FF	180°回転
.				
.				
.				

[Drawing 11]

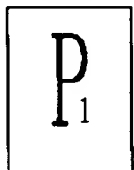
(右縦じ)



↑ ← 用紙搬送方向
出力始点

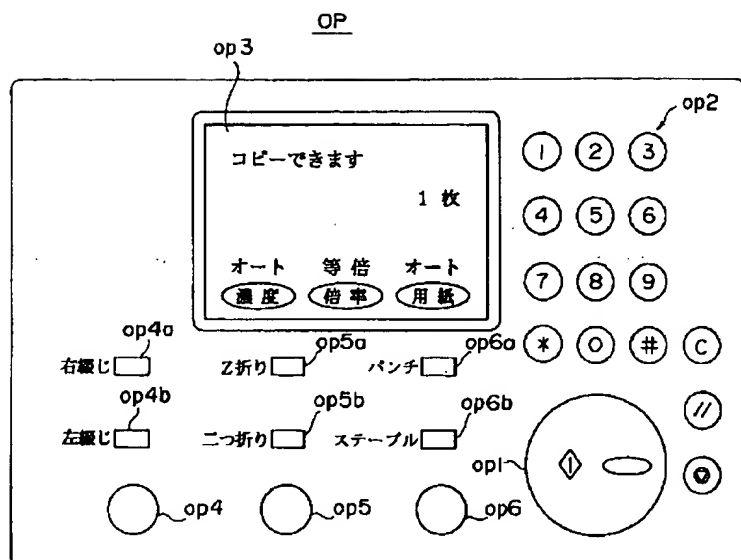
[Drawing 13]

(左縦じ)

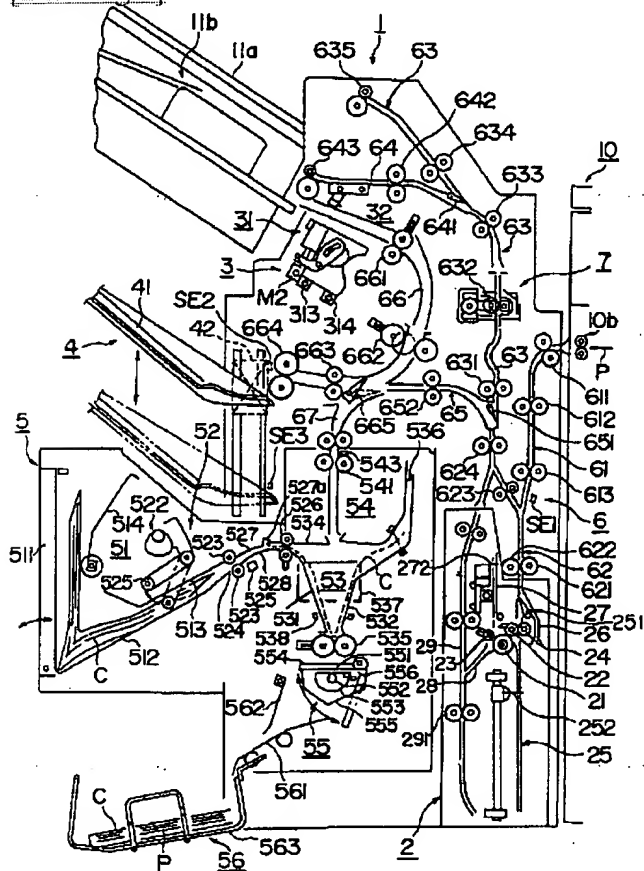


↑ ← 用紙搬送方向
出力始点

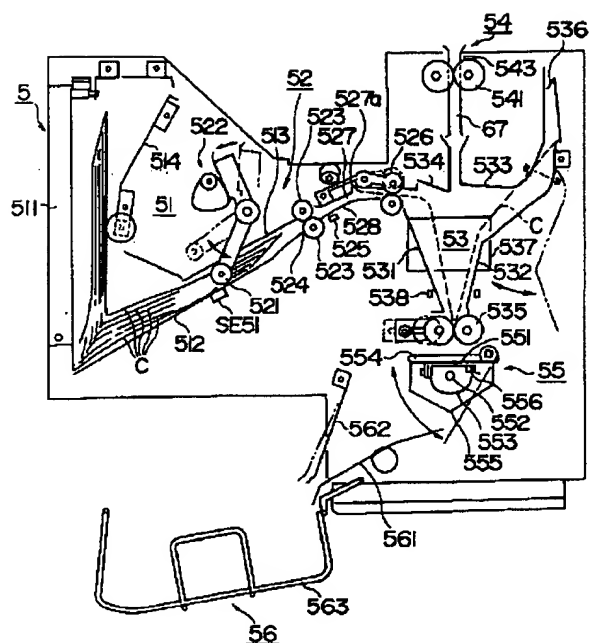
[Drawing 3]



[Drawing 4]



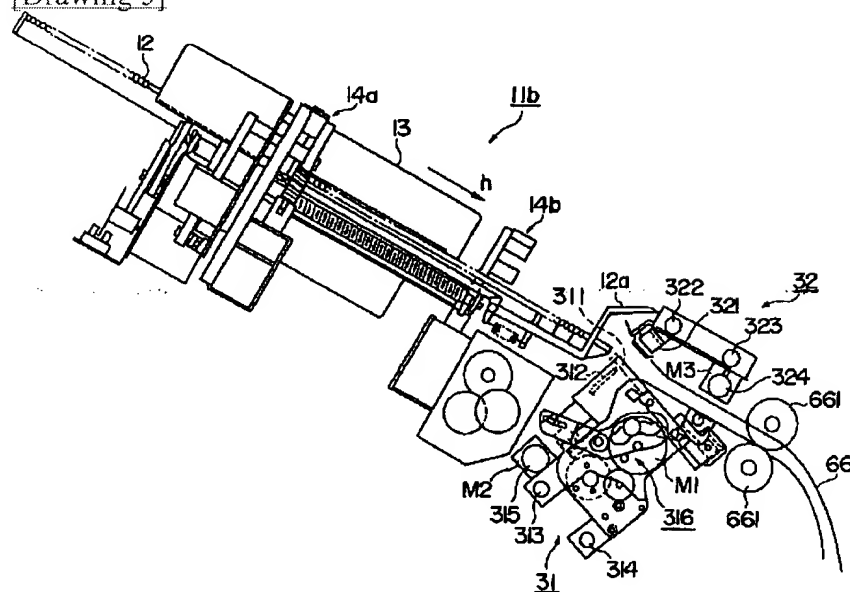
[Drawing 6]



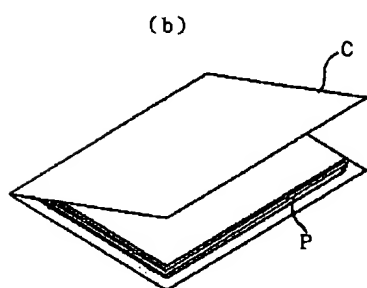
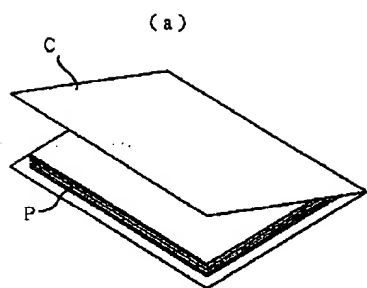
[Drawing 12]
出力指示テーブル (左側)

領域	No	前連結	後連結	付加情報
01	1	00	FF	
02	2	00	FF	
03	3	00	FF	
04	4	00	FF	
.				
.				
.				

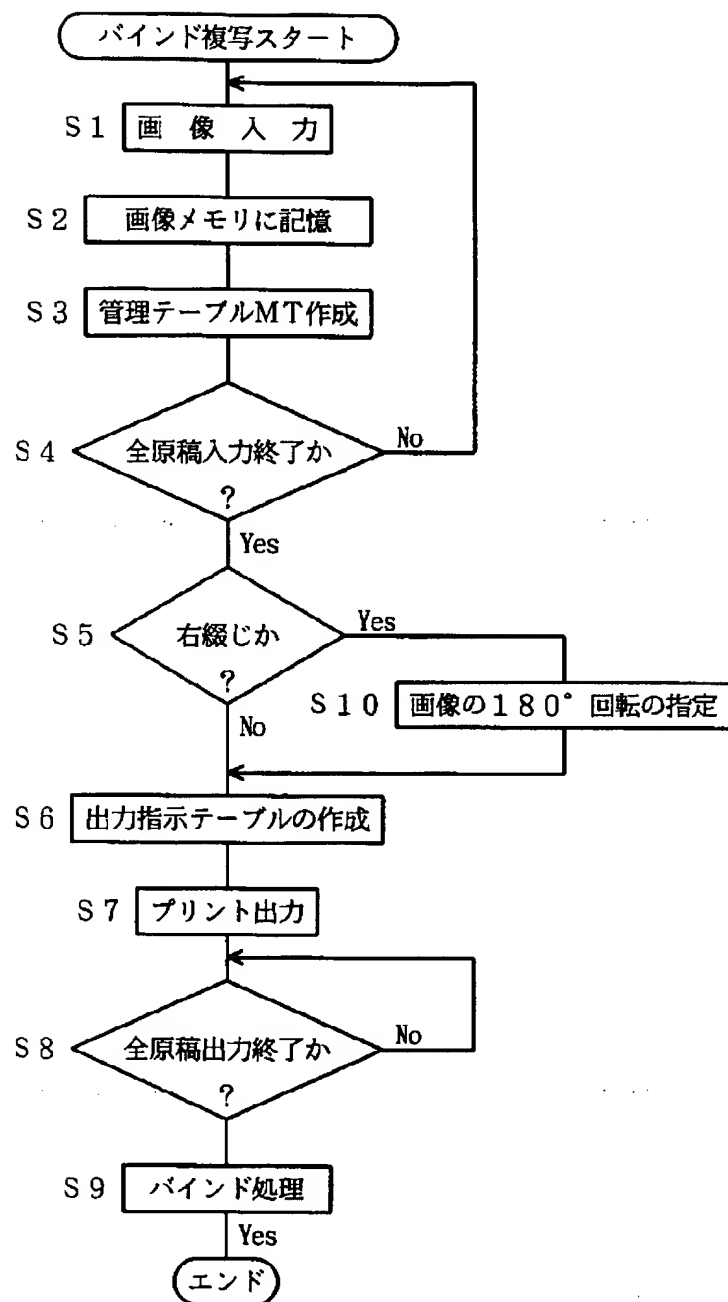
[Drawing 5]



[Drawing 14]



[Drawing 7]



[Translation done.]

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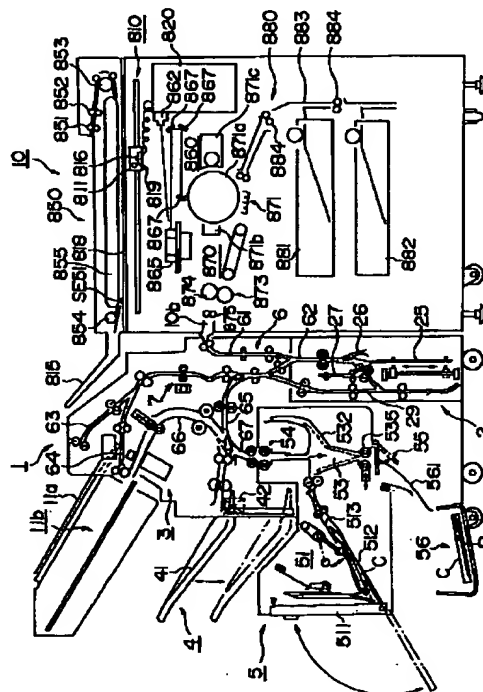
(74)代理人 弁理士 八田 幹雄 (外1名)

(54)【発明の名称】 画像形成装置

(57)【要約】

【課題】 専用カバーに複数の用紙を挿入してバインド製本する際に、右綴じ、左綴じを任意に行うことができる画像形成装置を提供する。

【解決手段】 原稿画像を読み込み、該画像をデータとして記憶し、このデータから出力される画像の向きを変更できる複写機10と、該複写機から出力される用紙を複数枚集積する集積手段11bと、該集積手段11bから複数の用紙を専用のカバーに挿入してバインド製本するバインド手段5と、を備え、右綴じにするか左綴じにするかを予め選択しておき、該選択にしたがって、出力される用紙上の画像の向きを変えることを特徴とする画像形成装置。



【特許請求の範囲】

【請求項1】 用紙上に出力する画像をデータとして記憶した画像データ記憶手段と、
 該画像データ記憶手段が記憶した画像の用紙上への出力の向きを変える画像処理手段と、
 前記画像データを用紙上に作像形成する作像手段と、
 該作像手段から出力される用紙の搬送経路下流側に設けられ、出力された用紙を複数枚集積する用紙集積手段と、
 背の部分の内側に熱溶着性の接着剤が塗布されたカバーを複数枚収容するカバー収容手段と、
 該カバー収容手段から前記カバーを1枚ずつ取り出すカバー給送手段と、
 該カバー給送手段により送られた前記カバーを開いた状態で支持するカバー支持手段と、
 該カバー支持手段により開いた状態で支持されたカバー内に、前記用紙集積手段から前記複数枚の用紙を搬送して、挿入する用紙搬送挿入手段と、
 該用紙搬送挿入手段により複数枚の用紙が搬送、挿入されたカバーの背の部分の暖め、前記熱溶着性の接着剤を溶融し、前記複数枚の用紙とカバーとを接着する加熱手段と、を有し、
 前記カバーに綴じられる向きが右綴じか左綴じかによって、用紙上に出力される画像の向きを変えることを特徴とする画像形成装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、複写機やプリンタに取り付けられ、複写またはプリントされた用紙を複数枚束ねて自動的に専用カバーに納めてバインド製本するフィニッシャを備えた画像形成装置に関する。

【0002】

【従来の技術】 近年、複写機やプリンタなどには、その出力後の用紙を自動的にまとめて、ステープルで綴じたり、また専用の表紙（カバー）に収納して自動的にバインド製本するフィニッシャが開発されている。

【0003】 このようなバインド製本に用いる専用カバーは、カバーの内側、背に当たる部分に熱溶着性の糊が塗布されている。フィニッシャでは、複数の用紙を専用カバーに納めて背の部分に熱を加えることで複数の用紙を糊付けしてバインド製本している。

【0004】

【発明が解決しようとする課題】 バインド製本された書類は、バインドされたとき、図15(a)に示すように、書類の右側を糊付けして綴じる右綴じと、図15(b)に示すように、書類の左側を糊付けして綴じる左綴じとがある。多くの場合、縦書きの文書は右綴じ、横書きの文書は左綴じにされる。

【0005】 ところが、複写機やプリンタなどに取り付けられたフィニッシャでは、複写機やプリンタなどから

搬送されてきた用紙を、搬送方向に対してそのまま専用のカバーに挿入して背の部分で糊付けして綴じてしまう。したがって、右綴じや左綴じといった綴じ方の違いを任意に変えることができないという問題があった。もちろん用紙搬送経路内に複雑なスイッチバック機構や用紙転換経路を設けることにより機械的に右綴じのときと左綴じのときとで、用紙の向きを変えて専用カバー内に挿入してバインドすることは不可能なことではない。しかし、これでは機械的構成のよる装置の大型化や、コストアップにつながるという問題がおきる。

【0006】 そこで、本発明の目的は、予め背の部分に熱溶着性の接着剤が塗布された専用カバーを用い、複数の用紙をバインド製本するフィニッシャを備えた画像形成装置において、書類の右綴じ、左綴じを任意に行うことができる画像形成装置を提供することである。

【0007】

【課題を解決するための手段】 上記目的を達成するための請求項1記載の本発明は、用紙上に出力する画像をデータとして記憶した画像データ記憶手段と、該画像データ記憶手段が記憶した画像の用紙上への出力の向きを変える画像処理手段と、前記画像データを用紙上に作像形成する作像手段と、該作像手段から出力される用紙の搬送経路下流側に設けられ、出力された用紙を複数枚集積する用紙集積手段と、背の部分の内側に熱溶着性の接着剤が塗布されたカバーを複数枚収容するカバー収容手段と、該カバー収容手段から前記カバーを1枚ずつ取り出すカバー給送手段と、該カバー給送手段により送られた前記カバーを開いた状態で支持するカバー支持手段と、該カバー支持手段により開いた状態で支持されたカバー内に、前記用紙集積手段から前記複数枚の用紙を搬送して、挿入する用紙搬送挿入手段と、該用紙搬送挿入手段により複数枚の用紙が搬送、挿入されたカバーの背の部分の暖め、前記熱溶着性の接着剤を溶融し、前記複数枚の用紙とカバーとを接着する加熱手段と、を有し、前記カバーに綴じられる向きが右綴じか左綴じかによって、用紙上に出力される画像の向きを変えることを特徴とする画像形成装置である。

【0008】

【発明の実施の形態】 以下、添付した図面を参照して、本発明の実施の形態を説明する。

実施の形態1

以下、まず本発明を適用し、ステープル手段やバインド手段などを有するフィニッシャを取り付けた複写機の構成および該フィニッシャの構成、並びにそれらの基本的な動作について説明し、次いで、このフィニッシャを取り付けた複写機による画像編集動作について説明する。

【0009】 《複写機の構成》 図1は、フィニッシャを取り付けた複写機の全体構成を説明するための概略図であり、図2は制御系のブロック図である。

【0010】 複写機10は、いわゆるデジタル複写機と

称されるものであり、大別すると、複写する原稿を読み取る走査系810と、読み取った画像データの処理を行う画像信号処理部820と、読み取った画像データを用紙上に出力するための光学系860および作像系870とによって構成されている。また、この複写機10の上部には、複写する原稿を搬送し、必要に応じて原稿の表裏を反転させる自動原稿搬送装置(ADF)850が設けられ、複写機10の上面には、この複写機10で行う各種画像編集処理の動作モードや複写枚数などを指令するための操作パネルOPが設けられている。

【0011】そして、この複写機には、後述するように、バインド手段、紙折り手段、パンチ手段およびステープル手段を装備したフィニッシャが取り付けられている。

【0012】このような複写機全体(ADFおよびフィニッシャを含む)の動作を制御する制御系は、図2に示すように、複写機10の制御を行う複写機用CPU910、ADFの制御を行うADF用CPU950、フィニッシャの制御を行うフィニッシャ用CPU980によって構成され、各CPUには、それぞれ必要なプログラムを記憶したROM911、951、981と、各CPUが各種処理のために使用するRAM912、952、982が設けられている。

【0013】複写機用CPU910には、操作パネルOPと画像信号処理部820が接続されており、この複写機用CPU910による指示で複写機各部の動作が行われる。また、画像信号処理部820には、A/D変換器821を介してCCDセンサ822が接続され、また、D/A変換器831を介して作像系のレーザ光源862が接続されている。さらに画像信号処理部820には、読み取った画像データを記憶しておくための画像メモリ825が設けられている。

【0014】以下さらにこの複写機10の各部の機能、動作について詳細に説明する。まず、ADF850の原稿トレイ815上にセットされた原稿は、ADF用CPU950の指示により、1枚ずつ原稿載置台(プラテンガラス)818上の所定的位置まで搬送され、走査系810により原稿が読み取られた後、ADF850上の排紙トレイに排出される。原稿は、ADFの各原稿搬送系ローラ851、852、853、854および搬送ベルト855が駆動されて搬送される。

【0015】この原稿の搬送時において、ADF850内に設置されているセンサSE51のオン/オフの時間により原稿サイズが検出される。センサSE51からの信号は、ADF用CPU950を介して複写機用CPU910に伝えられる。

【0016】走査系10は、スキャナ819がスキャンモータ(不図示)によって駆動され、プラテンガラス818の下を移動し、スキャナ819に取り付けられている露光ランプ811からプラテンガラス818上に載置

された原稿に光を照射し、その反射光を光電変換素子であるCCD816が受光して、原稿画像の走査読み取りを行う。この走査系10は、複写機用CPU910によって、前述の原稿搬送と搬送された原稿を走査するためのスキャナ819の駆動タイミングが調整されている。

【0017】走査系810のCCD816によって光電変換された信号は、A/D変換器821により、デジタルデータとして取り扱えるようにデジタル信号に変換され、画像信号処理部820に入力される。画像信号処理部820では、シェーディング補正、MTF補正、ガンマ補正などの画質補正が行われる。画質補正された画像データは、画像メモリ825に符号データとして記憶される。そして、後に説明するように記憶された画像データを元に、複写機用CPU910からの指示によって画像の拡大縮小や回転などの画像編集が行われる。

【0018】画像メモリ825は、複数のメモリ領域に区分されており、圧縮された画像データである符号データが記憶され、書き込みと読み出しの同時制御を可能となっている。そして、記憶された符号データは、管理テーブルMTによって管理されている。なお、画像データの管理については、後の画像編集処理のところで説明する。

【0019】画像の拡大縮小および画像の回転動作などは、複写機用CPU910が画像信号処理部820を介して画像メモリ825に記憶した符号データを読み出し、後に説明するように出力指示テーブルを参照してプリント出力の際に実行される。

【0020】画像信号処理部820において画質補正、並びに必要な画像処理や編集が行われた画像データは、後に説明する出力指示テーブルに基づいて、複写機用CPU910の指示により画像信号処理部820から取り出され、D/A変換器831によりアナログデータに変換されて、光学系860内の半導体レーザ862を駆動し、このレーザ光により作像系870の現像転写系871によって用紙上画像形成されてプリントアウトされる。

【0021】なお、光学系60は、半導体レーザ862、レーザビームを偏向するポリゴンミラー865、および反射ミラー867によって構成されており、作像系870は、現像転写系871、用紙を搬送する搬送系880および画像の定着を行う定着系873によって構成されている。また、現像転写系871は、感光体ドラム871a、帯電チャージャー871b、現像剤を収納し感光体ドラムにトナーを供給する現像器871c、感光体ドラム上のトナー像を用紙に転写させる転写チャージャ(不図示)、用紙と感光体ドラムとを分離する分離チャージャ(不図示)、および不要なトナーを除去するクリーニングプレート(不図示)などにより構成されている。

【0022】搬送系880は、用紙を収納したカセット

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881および882、用紙ガイド883やタイミングローラ884などによって構成されている。また用紙カセット881および882に収納されている用紙は、予め用紙カセットごとに納める用紙サイズが決められており、そのカセットごとに用紙サイズが判定される。なお、図示する場合には、用紙カセットは2つであるが、さらに多くの用紙カセットがあってもよい。

【0023】定着系873は、用紙を熱圧着しながら搬送する定着ローラ874、排出ローラ875および用紙の排出を検出する排出センサ（不図示）によって構成されている。

【0024】プリントアウトされた用紙は、排紙部10bから後述するフィニッシャ1に送られる。

【0025】この複写機10に設けられている操作パネルOPは、例えば図3に示すように、複写開始を指示するプリントキーop1、複写枚数を入力するテンキーop2、メッセージの表示と各種設定が行われる液晶表示タッチパネルop3、複写した用紙の綴じる形態を指示するためのセレクトキーop4とその状態を示す表示ランプop4a、b、用紙の折り方を指示する折りセレクトキーop5とその表示ランプop5a、b、およびステープル指示やパンチ指示を行う処理セレクトキーop6とそれらの表示ランプop6a、bなどより、例えばバインド製本する場合、セレクトキーop4の操作により右綴じか左綴じかが選択され、さらに液晶表示タッチパネルop3を用いて細かいモードの設定なども行われる。またバインド製本のとき、合わせてステープル処理やパンチ処理を行う場合にはそれらの指示も処理セレクトキーop6により行われる。

【0026】この操作パネルOPの制御は複写機用CPU910によって行われており、複写機用CPU910は各操作キーからの入力を判断して、各処理を実行し、かつその処理状態や各種メッセージを液晶表示パネルop3上に出力する。例えばバインド製本の場合には、フィニッシャ用CPU980に対し、後述するバインド手段を動作させて、用紙のバインドを行うための準備を行うようにする。

【0027】以上が複写機10の基本的な機能、動作である。

【0028】《フィニッシャの概略構成》図1に示したように、フィニッシャ1は、概して、複写機10の排紙部10bから排出された用紙Pを集積し整合するノンソートトレイ11a及び用紙集積部11bと、前記排紙部10bから排出された用紙Pを必要に応じて2つ折りや、Z字状に折り畳む（以下Z折り）紙折り手段2と、用紙集積部11bから用紙搬送方向下流側に設置され、集積し整合された用紙Pに対してステープル処理を施すステープル手段3と、このステープル処理後の用紙束が排出されて収容されるソート部4と、前記ステープル処理された後の用紙束またはステープル処理されていない

用紙束に対してカバーを取付けるバインド手段5と、用紙搬送経路中に設けられ必要に応じて用紙に穴あけを行うパンチ手段7とからなる。複写機10から排出された用紙は用紙搬送部6によりフィニッシャ内の各手段に搬送される。

【0029】《用紙搬送部》まず、用紙搬送部6は、図1に示したように、複写機10の排紙部10bから用紙Pを受け取って下方へ搬送する搬送路61と、用紙Pの前後及び表裏を反転させるスイッチバック搬送路62と、用紙Pをノンソートトレイ11aへ搬送する搬送路63と、搬送路63から分岐して用紙Pを用紙集積部11bに搬送する搬送路64と、前記搬送路63のほぼ始端部から分岐して用紙Pをバインド手段5またはソート部4へ搬送する搬送路65と、前記用紙集積部11bからの用紙束をソート部4あるいはバインド手段5へ搬送する搬送路66とで構成され、用紙Pはこれら各搬送路を中央基準で搬送される。

【0030】さらに詳述すれば、図4に示すように、搬送路61は、搬送ローラ対611、612、613を有している。スイッチバック搬送路62は、正逆回転可能な搬送ローラ621と、この搬送ローラ621に接触して従動回転する従動ローラ622と、スイッチバックされた用紙Pを搬送路63、搬送路64または搬送路65方向へ搬送する搬送ローラ対623、624と、用紙検出用のセンサSE1とを有している。

【0031】前記搬送路61を下方に搬送されてきた用紙Pは、まずスイッチバック搬送路62へ導入される。例えば、紙折りを行わない場合には該用紙Pの後端がセンサSE1で検出されて所定時間が経過すると、すなわち、用紙後端が搬送路62へ入り込むと、搬送ローラ621が逆転に切り換わり、スイッチバック搬送路62から搬送路63に向かって上方へ搬送される。

【0032】この搬送路63には、搬送ローラ対631、632、633、634及び排出ローラ対635が設けられ、また、用紙Pの先端部又は後端部にパンチ孔を形成する指示があればパンチ手段7により穴あけが行われる。

【0033】前記搬送路64には、用紙Pの搬送先を切り換えるための切換え爪641と、搬送ローラ対642及び排出ローラ対643が設けられ用紙Pをノンソートトレイ11aまたは用紙集積部11bに排紙する。

【0034】前記搬送路65には、用紙Pの搬送先を切り換えるための切換え爪651と、搬送ローラ対652が設けられて、用紙集積部へ送らずに直接バインド手段5またはソート部4まで導く。

【0035】これら切換え爪641、651は、それぞれ図示しないソレノイドによって回動され、前記スイッチバック搬送路62から搬送されてきた用紙Pは、切換え爪651によって搬送路63または65のいずれかへガイドされることになる。

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【0036】用紙集積部11bで集積し整合された用紙Pは、必要によりステابل処理が施された後、そのまま排紙される場合には比較的太い通路である搬送路66を通過してソート部4に導かれる。一方、バインド製本する場合には、必要によりステابل処理が施された後、搬送路66を通りバインド手段5へ導かれる。

【0037】この搬送路66には、相互に離間可能とされた搬送ローラ対661、662、663と、先端に排出ローラ664が設けられている。

【0038】《ソート部》ソート部4は、図4に示すように、ソートトレイ41と、このトレイ41を昇降させる駆動機構42とを有している。このソートトレイ41には、大量コピー時に用紙Pが1枚ずつ搬送路65を通過して送り込まれたり、用紙集積部11bからステابل手段3に送られ、ステابل処理された用紙束が搬送路66を通過して送り込まれる。なお、搬送路65または搬送路66から搬送された用紙Pまたは用紙束は切換え爪665によってトレイ41またはバインド手段5へガイドされる。

【0039】トレイ41上に収容され積載された用紙PはセンサSE2にて検出されるごとに、トレイ41は駆動機構42によって一定量ずつ下降される。センサSE3によりトレイ41が下限にまで下降したことが検出されると、このときトレイ41は満杯であり、以後のコピー動作が中断される。なお、トレイ41を一定量ずつ下降させる駆動機構42の構成は周知であり、説明は省略する。

【0040】《紙折り手段》紙折り手段2は、図1および図4に示したように、用紙搬送部6の直下に設けられ、画像形成済み用紙Pを搬送方向中央部で2つ折りにする機能、2つ折りにした用紙Pを再度開いて中央部に折り目を付ける機能、及び用紙PをZ折りにする機能を有している。

【0041】この紙折り手段2の中心的役割を果たすものは、3本の正逆可能な紙折りローラ21、22、23と、バックアップローラ24であり、用紙Pは、これらローラ21～24を中心として複数本の用紙搬送路25～29により授受が行なわれるようになっている。

【0042】紙折りについて、概説する。紙折り手段2は、複写機本体10の操作パネルOPの操作により選択可能な2つの紙折りモードを有している。

【0043】Z折りモード

このモードは、Z字状に用紙Pを折るモードで、排紙部10bから搬送路61、62を通過して送られてきた用紙Pは、スイッチバックローラ対621による搬送により切換え部材251を通過し第1搬送路25の方向に搬送されるが、停止している紙折りローラ22とバックアップローラ24で一旦停止される。そして、当該紙折りローラ22が駆動されると、所定の位置にセットされているストッパー252に当接するまで搬送される。スト

ッパー252に当接すると、用紙Pは、紙折りローラ21、22の近傍でループを形成することになるので、このループが紙折りローラ21、22のニップにかみ込まれ、第1の折りが行なわれる。

【0044】第1の折りが終了した用紙Pは、複写機10からのZ折り指示信号で、切換え部材271の切換え動作により、第2の搬送路27に搬送され、ストッパー272に当接するまで搬送される。このストッパー272により停止させられた用紙Pは、折りローラ21と23のニップ近傍でループを形成し、このループが折りローラ21、23のニップにかみ込まれ、第2の折りが行なわれる。第2の折りが終了し、Z折りされた用紙Pは、第3の搬送路28に搬送され、さらにスイッチバック搬送路29に向け搬送され、ここで、スイッチバックローラ対291の反転により、搬送路63に向けて搬送される。

【0045】2つ折りモード

このモードは、用紙Pを中央部で2つ折るモードである。このモードでは、前述のZ折りモードの第1の折り動作時と第1ストッパー252の位置が異なっているだけで、Z折りモード時と同様の過程を経て、第1の折りが行なわれる。第1の折りが終了した用紙Pは、第2の搬送路27の入口に設けられた切換え部材271が第2の搬送路27へ用紙Pを導くように回動されていないため、折りローラ21、23のニップへ向け直接搬送される。つまり、用紙Pは紙折りローラ21、22を抜けた後、直ちに紙折りローラ21、23のニップへかみ込まれると、そのまま第3の搬送路28へ搬送された後、スイッチバック搬送路29に搬送され、ここでZ折り時と同様にスイッチバックローラ対291により搬送路63に向け搬送される。したがって、2つ折りされた用紙の折り目のある側が図中下になり、用紙端部が上になって搬送される。

【0046】なお、このようにZ折りまたは2つ折りにされた用紙をバインド製本する場合には、搬送路65を通り、直接バインド手段5へ導かれてそこで用紙端部の整合が行われて、バインドされる。

【0047】《ステابل手段》ステابل手段3は、図4、図5に示すように、前記搬送路64から排出された用紙Pを用紙集積部11bにおいて整列処理した後に、当該用紙束の所定位置にステابلを施すもので、ステابل針を打ち出す針打ち部31と、この打ち出されたステابل針を受けて曲げる針受け部32とを有している。

【0048】前記用紙集積部11bは、トレイ12上に排出された用紙Pの先端（トレイ12への排出方向から見れば後端）を先端ストッパ12aが受け止めて整合し、側部整合板13が搬送方向に対して直交する方向に往復移動し、用紙Pの横方向を整合する。そして、第1チャック手段14aと第2チャック手段14bが、それ

ぞれ用紙Pの側部を交互に把持し、用紙Pの浮き上がりを防止するとともに第1チャック手段14aが用紙束を把持してステープル手段3に向けて送り出すようになっている。

【0049】針打ち部31は、針カートリッジ311のステープル針を、モータM1により駆動されるカムリンク機構316を介して針切断部材及び針曲げ部材312を作動し、針受け部32側に向けてステープル針を1本ずつ切断分離し突出するようになっている。また、針受け部32は、このステープル針をコ字形に折り曲げ、用紙束を結束する針受け部材321を有している。ただし、これらは、周知に属するので詳述は避ける（例えば、特願平8-66143号参照）。

【0050】用紙搬送方向hとは直交する方向のステープル針の打ち込み位置は、針打ち部31を2本のガイド軸313、314にスライド自在に装着するとともにステッピングモータM2によって用紙搬送方向hとは直交する方向に設けられたスパイラル軸315の正逆転により移動し得るようにし、また針受け部32も2本のガイド軸322、323にスライド自在に装着し、ステッピングモータM3によって駆動されるスパイラル軸324の正逆転に伴って、用紙搬送方向hとは直交する方向に移動することにより行なう。

【0051】また、用紙搬送方向のステープル針の打ち込み位置は、前記チャック手段14aによる移動により決定する。したがって、この第1チャック手段14aの送りだし量により、集積された用紙の先端乃至後端のいずれでもステープル処理を施すことができる。綴じの場合には、2つ折りされた用紙の端部（トレイ12への排出方向から見れば先端）が針うち部31の位置にくるまで押し出される。

【0052】そして、ステープル処理された後には、相互に離間可能とされた前記搬送ローラ対661に挟み込まれ、搬送路66により搬送される。

【0053】《バインド手段》バインド手段5は、複写後の用紙を束にして市販されているカバーを用いて糊付けするものである。このバインド手段5は、図1、図4および図5に示したように、複数枚の市販のバインド用カバーを収容するカバー収容部51と、カバー収容部51から1枚のカバーCを取出し搬送するカバー搬送部52と、カバー搬送部52より搬送されたカバーCを開いた状態で保持する用紙挿入部53と、前記搬送路67内を搬送されてきた用紙束をカバーC内へ挿入する用紙搬送部54と、用紙挿入部53にて用紙Pが挿入されたカバーCに加熱処理を行なう加熱部55と、バインド後のカバーCをバインド装置外へ排出し、収容する排出部56とから構成されている。これにより用紙集積部11bにおいて整合された用紙束がそのまま、またはステープル処理が施された後、搬送路66および67を経てバインド手段5に送られてバインド処理されるか、もしくは

紙折り手段2により紙折りされた後、搬送路65を経て1枚ずつバインド手段5に送られて複数枚の用紙がバインド処理される。

【0054】カバー収容部51は、カバーCを収容するための空間が、開閉扉511、カバー保持部材514、収容下ガイド512、513によりカバーが開いた状態（図4に示す状態）でV字形にて収容される。

【0055】カバー搬送部52は、収容されたカバーCのうら表紙面に当接し、カバーCの先端を搬送するピックアップローラ521と、当該ピックアップローラ521をカバーCに圧接させるローラ圧接部材522と、カバーCを1枚だけ搬送するサブキローラ対523と、サブキローラ対523の上流に配置された前サブキ部材524と、サブキローラ対523の下流に配置されたカバー検出手段525と、サブキローラ対523の下流に配置されたカバー搬送ローラ対526と、カバー収容部51と用紙挿入部53とを継ぐよう構成されたカバー搬送ガイド527、528とを有している。

【0056】用紙挿入部53は、逆三角形形状の用紙挿入空間を形成するガイド板531、532、533、534と、用紙挿入空間下方に配置されたカバーレジストローラ対535と、用紙挿入空間のカバー搬送方向上部に配置された先端ストッパー536と、前記カバーレジストローラ対535の上方の用紙挿入空間内に配置された横整合部材537とにより構成されている。

【0057】前記カバー搬送部52より搬送されたカバーCの先端は、ガイド板512に沿って上方へ向かい、先端ストッパー536に当接するが、さらにカバーCは、搬送されてカバー背部が下方へ折れ曲がりガイド531、532間を通過してカバーレジストローラ対535により下端が規制される。

【0058】当該カバーレジストローラ対535の上方に設けられたカバー検出手段538によりカバー背部の通過が検出されて一定時間（カバー背部がカバーレジストローラ対535上に当接しかつカバー後端がカバー搬送ローラ対526上流にある時）後、カバー搬送ローラ対526の少なくとも上ローラをカバー搬送路外へ退避させる。

【0059】カバー搬送ローラ526の退避により、カバーCのおもて表紙は、そのコシによってカバー後端がカバー搬送ガイド527のくぼみ部527aに係合し、カバーCの後端位置が規制される。これによりカバーCは、図中に破線で示すように、背部がカバーレジストローラ対535上に載置されたV字状で用紙挿入部53にセットされる。

【0060】用紙挿入部53へのカバーセット後、横整合部材537がカバーの搬送方向に対して直交する方向に移動され、カバー端面を前記横整合部材537と対向して設けられた整合基準板（図示せず）に押圧し、位置が規制される。

【0061】用紙搬送部54は、前記レジストローラ対535の上方まで伸延された前記搬送路67に、用紙束を用紙挿入部53に搬送する搬送ローラ対541と、搬送路67内の用紙Pを検出する検出手段543とを有し、搬送ローラ対541により搬送された用紙束が、用紙挿入部53内で上方に向かって開放された状態のカバーC内へ自重落下するようになっている。この自重落下によって用紙の接着される端部が整えられる。

【0062】加熱部55は、用紙挿入部53より搬送されたカバーCの背部を加熱する加熱板551と、加熱板551の下部に配置されたヒータ552と、当該ヒータ552の下部周囲を囲み、ヒータ552の熱を加熱板551に集中させるよう形成された反射板553と、前記加熱板551、ヒータ552、反射板553を一体的に保持するヒータ支持板554と、当該ヒータ支持板554に取付けられた遮蔽用の断熱部材555と、温度検出手段556とにより構成されている。

【0063】用紙挿入部53において、カバーC内に用紙束が挿入されると、カバー搬送ローラ対526がカバーCの端部を圧接し、その後カバーレジストローラ対535の少なくとも一方が用紙挿入空間外へ退避する。そして、当該カバーレジストローラ対535を正転すると同時にカバー搬送ローラ対523を回転させ、カバーC及び用紙束を用紙挿入部53の下部の加熱部55へ送り込み、カバー搬送ローラ対526およびカバーレジストローラ対535の駆動を停止し、カバー搬送ローラ対526を離間すると同時にカバーレジストローラ対535によりカバーCおよび用紙束を圧接する。この動作によりカバーC内の用紙束の端部がさらに整えられることになる。

【0064】整合動作終了後、カバーレジストローラ対535がカバーCおよび用紙束を圧接した状態で加熱板551上のカバー背部を適正温度にて一定時間加熱することで、カバー背部に固着された接着剤を溶かし、カバーCと用紙束を接着する。その後、カバーCと用紙束が確実に接着される時間を見計って、カバーレジストローラ対535を正転させ、排出する。

【0065】排出部56は、排出ガイド561と、閉鎖板562と、排出トレイ563とから構成され、加熱部55より搬送されたカバーCは、傾斜された排出ガイド561の表面を自重ですべり落ち、排出トレイ563に收容される。

【0066】以上がフィニッシャの構成である。

【0067】《画像編集処理》以下、バインド動作について説明する。

【0068】図7は、バインド動作のメインフローチャートである。まず、ADF850にセットされた原稿から1ページ目が搬送されて、画像の読み取り・入力が行われる(S1)。入力された画像データは画像メモリ825に記憶される(S2)。そして、メモリ内の画像デ

ータの配置を管理する管理テーブルMTが作成される(S3)。以上S1～S3の動作をADF850にセットされた全ての原稿について実行する(S4)。

【0069】次いで、操作パネルOPから指示が右綴じか左綴じかの確認が行われる(S5)。ここで右綴じが選択されていれば、本実施の形態では搬送経路の構成やバインド手段の構成から、画像の180°回転の指示(S10)を行い出力指示テーブルの作成(S6)に移る。一方、右綴じでなければ(左綴じが選択されている)、そのまま出力指示テーブルの作成(S6)に移る。なお、出力管理テーブルの作成については後述する。

【0070】次いで、作成された出力指示テーブルの指示に基づいて、用紙上にプリント出力される(S7)。プリント出力された用紙は前述した用紙集積部11bに收容される。そして、全ての原稿がプリント出力されたか否かを確認(S8)した後、前述したバインド手段5によりバインド製本される(S9)。

【0071】このような画像編集を行う理由は、複写機による画像の読み取り方向およびプリント出力の際の用紙搬送方向と関係がある。

【0072】まず、画像の読み取り方向であるが、本実施の形態の場合、図8に示すように、原稿が図示する主走査方向および副走査方向に走査されて読み込まれる。したがって、画像メモリ825に記憶される画像データは図中読み取り始点で示される部分が先頭アドレスとして記憶され、読み取り終点として示される部分が最終アドレスに記憶される。なお、ここで、主走査方向はCCD816の画像読み込み方向であり、副走査方向はスキャナ819の移動方向である。

【0073】このように読み込まれた画像データは、1枚の原稿がA4サイズであれば、図9(a)に示すように、画像メモリ825内の複数に分割された領域の一つに1枚分の原稿が記憶される。そしてこの画像メモリ825内の各領域に記憶された画像データは、管理テーブルMTによって管理される。管理テーブルMTは、図9(b)に示すように、画像メモリ825内の領域を示す番号、入力順に付される原稿No、連結されている領域の番号および付加情報として、圧縮方式およびデータ長などの圧縮伸長処理に必要な各種の情報が格納されている。図9(b)中、前連結は入力された1枚の原稿が2つ以上の領域にまたがって記憶された場合の、前方向の連結とその領域が最初の領域であるか否かを示し、「00」で最初の領域、それ以外で前の領域番号を示す。同様に後連結は、後方向の連結とその領域が最後の領域であるか否かを示し、「FF」で最後の領域、それ以外で連結される後の領域番号を示す。ここではA4サイズの原稿は1枚の原稿画像データは1領域で収まるため前連結は全て「00」となり、後連結は全て「FF」となる。

【0074】このように記憶された画像データをプリント出力する際に参照されるのが、前記ステップS6において作成される出力指示テーブルである。

【0075】まず、右綴じの場合の出力指示テーブルは、前述のステップS10による画像の180°回転の指示を受けて、図10に示すように、読み取った原稿順に出力されるように、原稿の読取り順であるNo1が記憶された領域01から順に出力されるように並べられ、かつ、各領域ごとの付加情報として180°回転の指示が記憶される。

【0076】プリント出力は、この出力指示テーブルに基づいて行われ、その出力は、図11に示すように、この図において倒立した画像となる。これにより、本実施の形態では、用紙上での画像が正立した状態で用紙右側の端部がカバーの背の部分にあたるように出力されることとなる。この時プリント出力のための画像データは最終アドレスから読み出してプリント出力すれば、180°回転したプリント出力となる。

【0077】なお、図示した出力管理テーブル中、前連結の番号は1枚の用紙上に出力される画像領域が複数ある場合に、それより前に出力される領域の番号が、ない場合には「00」が指定される。また後連結の番号は1枚の用紙上に出力される画像領域が複数ある場合に、それより後に出力される領域の番号が、ない場合には「FF」が指定される。

【0078】次に、左綴じの場合は、画像回転などの指示は行われないため、作成される出力指示テーブルは、図12に示すように、原稿の読取り順であるNo1が記憶された領域01から順に出力されるように並べられるだけである。これによりプリントされた用紙は、図13に示すように、この図において画像が正立し、用紙上での画像が正立した状態で用紙左側の端部がカバーの背の部分にあたるように出力されることとなる。

【0079】以上により図14(a)および(b)に示したような右綴じおよび左綴じのバインド製本を任意に、かつ容易に実行することができる。

【0080】なお、以上説明した本実施の形態では、複写機にフィニッシャを設けた形態であるが、本発明はこのような形態に限定されるものではなく、例えばコンピュータに接続されたプリンタにフィニッシャが取り付け

たものであっても同様に実施することができ、この場合、右綴じとするか左綴じとするかによりプリンタからの出力画像の向きを変えることで、容易に右綴じ、左綴じのバインド製本を行うことができる。

【0081】

【発明の効果】以上説明した本発明によれば、選択された綴じ方となるように、画像の向きを変えて用紙上画像

の出力することとしたので、機械的に用紙の搬送方向を転換するような機構を用いることなく、右綴じまたは左綴じのバインド製本を任意に、かつ容易に実行することが可能となる。

【図面の簡単な説明】

【図1】 本発明を適用した複写機とフィニッシャの概略構成を示す図面である。

【図2】 上記複写機とフィニッシャの制御系を説明するためのブロック図である。

10 【図3】 上記複写機に設けられている操作パネルの一例を示す図面である。

【図4】 上記フィニッシャの構成を示す図面である。

【図5】 上記フィニッシャに設けられているステープル手段の構成を示す図面である。

【図6】 上記フィニッシャに設けられているバインド手段の構成を示す図面である。

【図7】 上記複写機におけるバインド複写時の画像処理の手順を示すフローチャートである。

【図8】 上記複写機における原稿読み取りを説明するための図面である。

【図9】 上記複写機における読み取った画像データのメモリ配置とその管理を行う管理テーブルを説明するための図面である。

【図10】 右綴じのときの出力指示テーブルを説明するための図面である。

【図11】 右綴じのときの用紙出力結果を説明するための図面である。

【図12】 左綴じのときの出力指示テーブルを説明するための図面である。

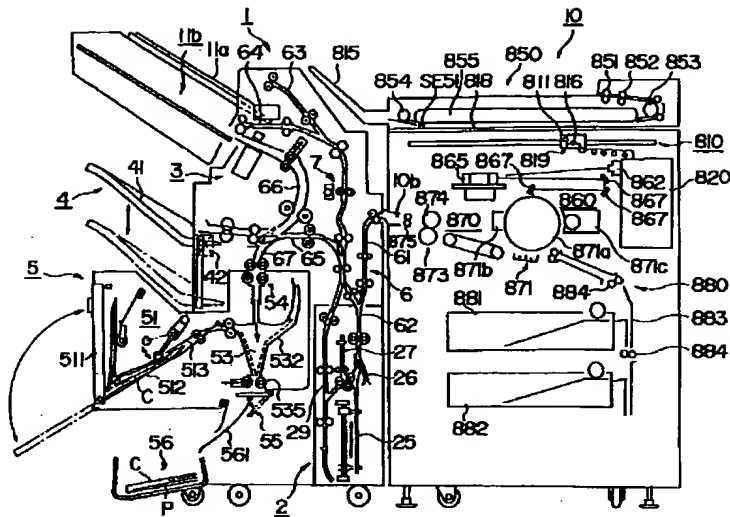
30 【図13】 左綴じのときの用紙出力結果を説明するための図面である。

【図14】 バインド製本された書類の右綴じ、左綴じを説明するための図面である。

【符号の説明】

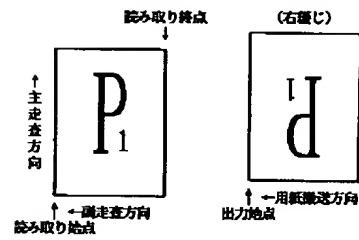
- 1…フィニッシャ、
- 2…紙折り手段、
- 5…バインド手段、
- 10…複写機、
- 51…カバー収容部、
- 40 52…カバー搬送部、
- 54…用紙搬送部、
- 55…加熱部、
- 820…画像信号処理部、
- 825…画像メモリ、
- 910…複写機用CPU、
- 980…フィニッシャ用CPU。

【図1】



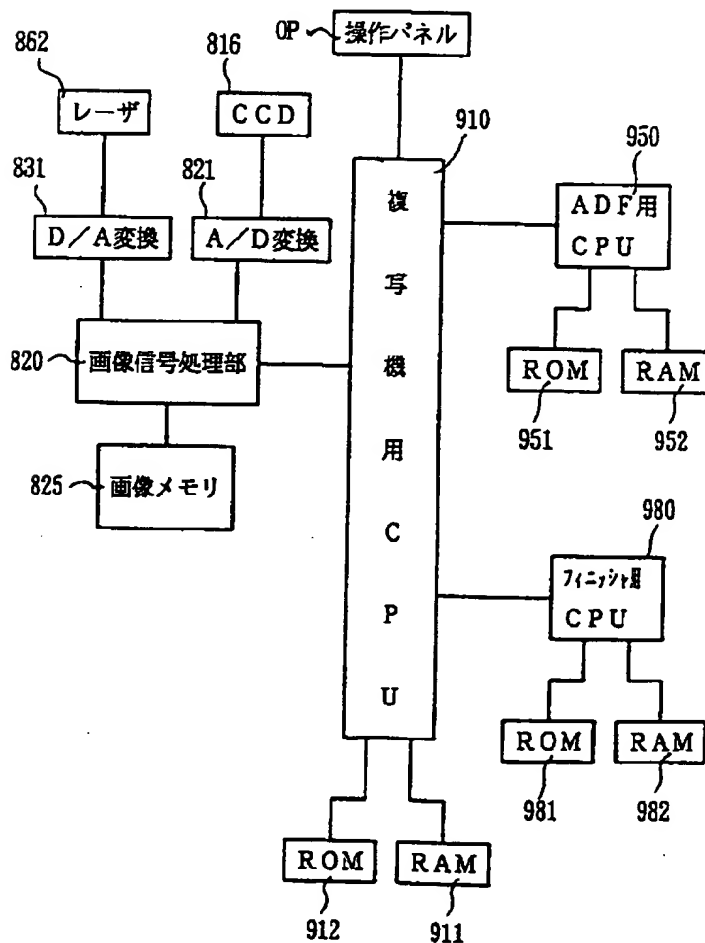
【図8】

【図11】



【図2】

【図9】



(a)

領域	圧縮された符号データ
0	01 1枚目の符号データ
32K	02 2枚目の符号データ
64K	03 3枚目の符号データ
96K	04 4枚目の符号データ
128K	.
.	.
.	.

(b)

管理テーブルMT

領域	No	前連結	後連結	付加情報
01	1	00	FF	
02	2	00	FF	
03	3	00	FF	
04	4	00	FF	
.				
.				
.				

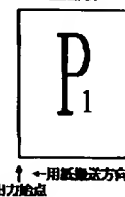
【図10】

【図13】

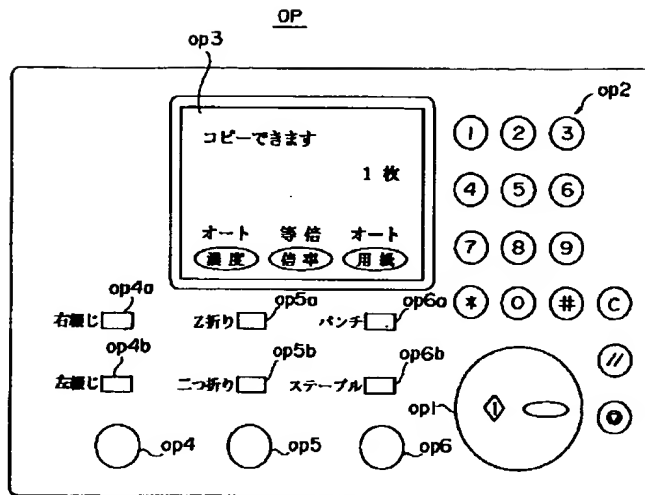
出力指示テーブル (右欄)

領域	No	前連結	後連結	付加情報
01	1	00	FF	180°回転
02	2	00	FF	180°回転
03	3	00	FF	180°回転
04	4	00	FF	180°回転
.				
.				
.				

(左欄)



【図3】

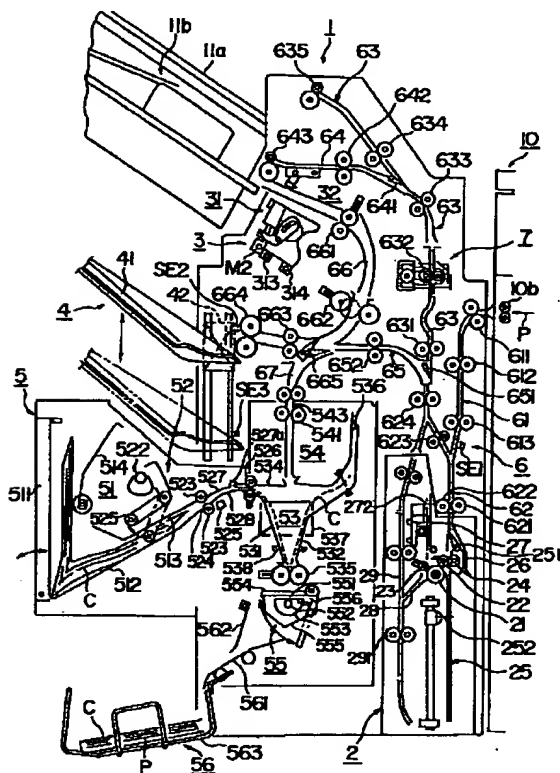


【図12】

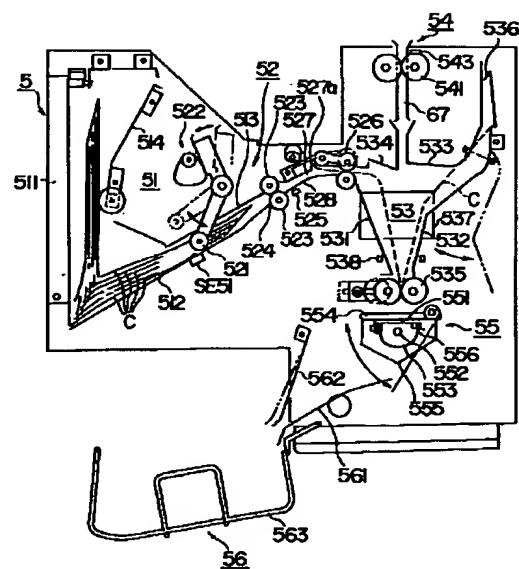
出力指示テーブル (左綴じ)

領域	No	前連結	後連結	付加情報
01	1	00	FF	
02	2	00	FF	
03	3	00	FF	
04	4	00	FF	
.				
.				

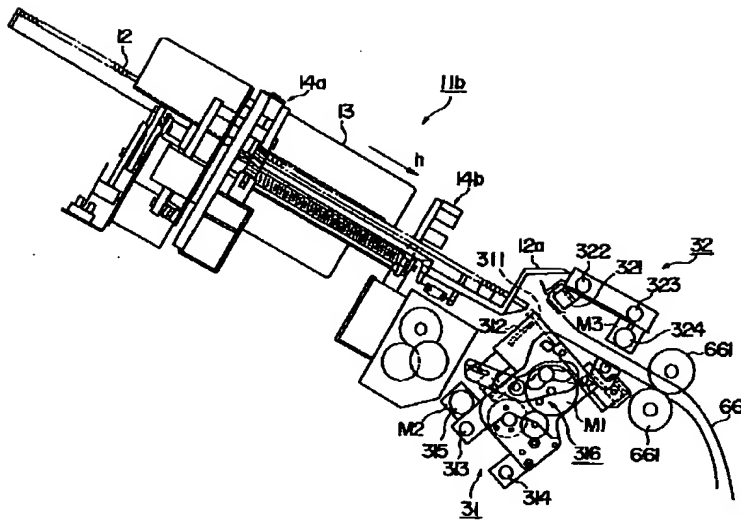
【図4】



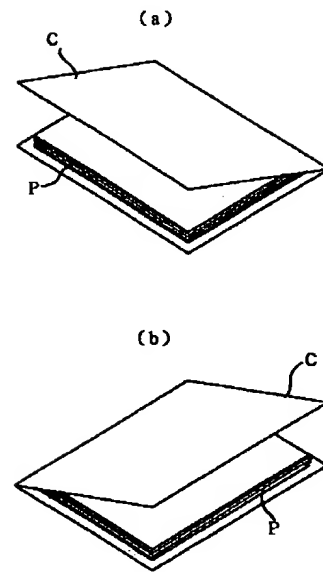
【図6】



【図5】



【図14】



【図7】

